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AMERICAN ARTISAN and Hardware Record

Vol. 87, No. 19.

620 SOUTH MICHIGAN AVENUE, CHICAGO, MAY 10, 1924.

\$2.00 Per Year



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When you advocate the use of HORSE HEAD ROLLED ZINC for conductors, gutters and fittings, you are recommending life long service, reasonable price, no up-keep expense or replacements, and a non-staining material.

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Thoroughly Covers
the
Warm Air Furnace
Sheet Metal, Stove
and
Hardware Interests

AMERICAN ARTISAN and Hardware Record

Address all communications
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DO IT THE COMMON-SENSE WAY!!

You'll agree that the common-sense method of advertising is to find out who your prospects are and what fields they are in, and then to advertise to them directly through the specific business paper serving their interests.

This method has been successfully used for nearly three-quarters of a century by more manufacturers than have employed any other method of publicity.

Equally true is the fact concerning the seeking of reliable information about the particular field in which you are engaged.

The editorial columns of AMERICAN ARTISAN are devoted to the development and perpetuation of the Warm Air Heating, Stove and Range, and Sheet Metal industries. Its readers are cordially invited at all times to use this common-sense method of obtaining the advice they need for the successful conduct of their businesses.

Answers to all questions will be held strictly confidential if so desired by the sender. If no mention is made to the contrary, questions and answers will be published in the various departments of AMERICAN ARTISAN.

Where Anaconda Copper means Economy

- | | |
|-------------------------------------------------------------------|---------------------------------------------------|
| Refrigerator linings | Suspended gutters |
| Flashings and gutter linings | Kalomine work |
| Eaves troughs and hangers | Leaders, and hooks and straps |
| Ventilators [exterior] | Skylights |
| Elbows | Bulkheads |
| Scuttles | Weather vanes |
| Cornices | Furnace smoke pipes |
| Drains for shower baths, sinks, floors | Window sills and trim |
| Elevator and dumbwaiter shaft linings | Ridge rolls and valleys |
| Linings for corn cribs, silos and feed bins | Skylight curbs and fittings |
| Flues, small chimneys and chimney flashings | Gutters back of metal covered wood cornices |
| Ventilating system exhaust hoods and flues of various description | Metal lath [in stucco used for exterior purposes] |
| | Outlets in composition or promenade-title roofs |

For these purposes we sell Anaconda Copper in sheets, rolls and economy strip.

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Waterbury, Conn., Buffalo, N. Y.
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Does It Really Pay an Installer to Do Good Furnace Work?



THREE is no question in our mind that it always pays to do any piece of work well.

But there are many sheet metal contractors and furnace installers who apparently do not share that conviction.

They argue that there are not enough people who are willing to pay the price that must be asked if the contractor is to make a reasonable profit on his investment in money and time.

They also maintain that too many people are interested in getting a job done at the lowest price, either without regard to the quality of the material used and of the work done, or because of a failure to appreciate the fact that good work and quality material must necessarily demand a higher price.

And they are absolutely wrong in both cases!

The real reason for these claims is, that it is always easier to claim that you can do the work—equally well, of course, being understood—at a lower price.

No salesmanship or backbone is required in that sort of “selling.”

The contract peddler—more politely known as the general contractor—knows how to work his “game” to perfection.

He hears about a big building project, a large business structure, or a group of residences; he gets next to the architect, secures the specifications and plans, obtains preliminary bids from three or four sheet metal contractors, half a dozen mason or carpenter contractors and others, makes his composite bid and gets the “general” contract.

Next he calls Smith, the sheet metal contractor, and tells him that “he got the job,” and that he “would like to give the sheet metal work to Smith, but his estimate is \$100 higher than that of Jones. Smith, who is a weak sister, takes his word for it, cuts his own

price \$105 and perhaps gets the sub-contract at a figure which makes it necessary to “skin” the job, when in the majority of cases Jones’ estimate was no lower than that of Smith.

In this connection, just a piece of valuable information:

After a bid has been submitted there is no law against your discussing with your competing fellow contractor the price you asked.

Now, take on the other hand, the case of Reichmann and Nordert, furnace installers in Cicero, one of Chicago’s western suburbs. You will find on pages 21 and 22 of this issue an article telling how they built up a profitable business dealing with real estate operators on the basis of selling a high grade furnace properly installed at a price that yields them a fair profit.

Of course, what they did requires real salesmanship.

And the first principle of salesmanship is a thorough belief in what you have for sale; with this must be coupled a reasonable amount of backbone and a conviction that a good job is worth a price that will allow you a decent profit.

There are plenty of people who will pay a fair price for a good piece of work—far more than the average sheet metal contractor and furnace installer seem to think.

But you will find a larger portion of this class of customers by looking for them instead of expecting them to telephone you or to come to you.

And remember this:

The man whom you locate by hunting for him very frequently will give out his work without asking for any competitive bid.

Which means that you will not be asked to “share” your price to “meet” phantom competition.

Then, business functions properly.

Random Notes and Sketches.

By Sidney Arnold

Charlie Gohmann is somewhere near my age, but he has not got beyond the point where he cannot appreciate the spirit of Easter, as evidenced by the fact that I received a beautiful card from him with this imprint:

You've been told the fairy stories of
the Bunnies and their eggs,
That in childhood days made
Easter time so dear;
So we send this little picture to re-
call them once again,
And wish you Easter Greetings
most sincere.

Charlie and his Pointer ranges occupy a unique position. There are few men in the stove trade who do not know or know of him, and lots of them sell his specialized, one quality range at a good profit to themselves.

* * *

On Monday night before the Annual Meeting of the National Warm Air Heating and Ventilating Association, some of the early arrivals who had worked hard all day to grease the wheels of the steam roller decided that they were entitled to some light entertainment, so they repaired in close marching order to one of the gilded palaces on Euclid Avenue, where the so-called screen "art" is displayed.

It was E. B. Langenberg's fortune to be seated just behind a vacant chair and he was just congratulating himself upon the fact that there was nothing to interfere with his free vision when in marched two young women who took the two seats just in front of him and Allen Williams.

They were nicely dressed and topped off with those close-fitting, helmet-looking affairs that go under the name of "creations" and cost five times as much as they ought to, from a material and labor standpoint (those milliners certainly know how to figure "overhead" costs).

Still "E. B." was satisfied. There was plenty of free air space between the two girly heads.

But alas and alack, their hats were removed, the brand new "marcelles" of the bobbed crowning glories expanded until not an inch of the silver screen could be seen by our friend from St. Louis—and it was just at the moment when the villain was putting in his dirtiest work.

However, as we all know, "E. B." does not allow unimportant things to block his progress or wishes, and in this instance his wits soon showed him the way.

He leaned forward and whispered to the two ladies: "Pardon me, ladies, but wouldn't you be kind enough to put your hats on again? I cannot see the screen. Thank you very much."

* * *

George S. Auer, President of the Auer Register Company, who spent the winter in Southern Europe, is now on the job a full day every day and is trying to catch up with all the things that happened while he was away. He got to Athens just a day or two before the Greeks showed their former king the way out.

He says that if some of the grown-ups over there would do a little more work instead of talking so much about their hard luck, they would have better conditions and their children would not have to depend on American charity.

* * *

Jack Eaglesfield, of the Eaglesfield Ventilator Company, has gone and done it, and now Bob Kruse is in mourning, for he has lost one of his comrades in the select organization known as the "I. C. B. B."

Those who are not familiar with the meaning of these mysterious initials are hereby informed that they stand for "Indianapolis Confirmed Bachelors' Brotherhood."

Jack forsook the estate of single

blessedness a few weeks ago and got out of town with his bride for a trip to the Bermudas without any serious happenings. They have settled down to double harness in fine shape and are at home at 232 East 13th street, Indianapolis.

The young lady's name before the wedding was Miss Sallie Houison; now she is of course, Mrs. Jack Eaglesfield, and her lesser half (not in volume but in importance) seemed to have forgotten her real first name when he talked to her.

I'll say this, that if Bob can find as nice a young lady for a life partner, he will not be mourning Jack's loss much. Just imagine having somebody come down after a hard day's work and drive you home. Think it over, Bob.

* * *

My Daddy's Picture.

I love to go to grandma's house
An' see my daddy's picture
W'en he wus just a boy like me
An' had th' grandest future.

An' gran'ma says he never gave
Her enny sass or trouble,
An' always told th' truth out bold,
You wouldn't catch him grovel.

An' gran'ma says his eyes were blue,
Not dinky blue like mine,
But purple-blue like pansies,
With lashes long an' fine.

An' everybody loved him so,
"Twas strange he wasn't spoiled—
An' gran'ma says it worried her,
She'd most ruther he'd been wild.

An' he wus so endered to all,
Bein' kind to dog an' cat,
An' if he had not married
He might of worn a bishop's hat.

Or else he'd been a judge in court,
As wise as th' Jewish king;
En gran'ma hugs me nice an' tight
An' sings a little hymn

About th' Light that leadeth
W'en day is growin' dim,
An' th' Shepherd guides His chil-
dren
From th' paths o' strife an' sin.
—Carlotta Bonheur Stearns.

Millis Explains Building Wall's Heat Losses as First Step in Determining Duct and Furnace Sizes.

Warm Air "Flows" from Warm Rooms to Cold Rooms at Definite Rates According to Material Used in Walls.

L. W. MILLIS has given herein-after another interesting and instructive lesson on heat losses through the walls of buildings made of several different kinds of materials.

He also explains the B. t. u. and how it is derived, as follows:

A few nights ago we determined for ourselves that a British thermal unit is an acceptable, usable basis for measuring a quantity of heat and that a thermometer tells us only the temperature of things. You, of course, recall that a B. t. u. is the amount of heat required to raise one cubic foot of air 55 degrees or one pound of water one degree. From now on we will speak of a B. t. u. without batting an eye, just as though we had known all about it for a lifetime.

We also know that the heat will "flow" from a warm to a cold body and that heat will pass through various materials. With this information we should be able to calculate the heat loss from any building. This is the first step toward determining what sized furnace, pipes and ducts are required to properly heat the building. The amount of heat lost through every kind of building material has been accurately determined. For example, various authorities state that one square foot of single thickness glass will lose 70 B. t. u. in one hour if there is a difference of 70 degrees on the two sides of the glass. But if the glass be double that the loss will be only 43.4 B. t. u.

I have been asked to tell you how anybody knows that to be correct, and how they arrive at the heat loss of various building materials. You already know that heat and power can be changed into electricity and also that electricity can be changed into heat. You can imagine that clear thinking men have approached

this from many angles. One of several accurate methods will answer our purpose. Let us suppose that we want to know how much heat will pass through a plate of single strength glass containing ten square feet. Imagine two adjoining rooms constructed so that one room is maintained by convected heat at a uniform temperature of 70 degrees

and the other at a uniform temperature of zero. Also imagine an opening between the rooms with the glass installed in it. There would, of course, be a steady flow of heat from the warm room, through the glass, into the cold room. We have only to measure the flow in order to satisfy our craving for information. That is not as hard as it appears.

TABLE GIVING SIZE OF BASEMENT PIPE 6 CONDITIONS OF 32 ROOMS READ DOWN UNDER NO WALLS EXPOSED - LOWER CROSSLINES 1 ST FLOOR. UPPER 2 ND						
ASSUMPTION: FOR 9' CEILING + GLASS 1 WALL LONGEST - 2 WALLS 1 LONG, 1 SHORT - 3 WALLS 2 LONG 2 SHORT - CENTER FIG = CUFT.						
ADD 1% EACH DEG. BELOW ZERO ADD FOR LONG (OR CROOKED PIPE) SEE U. of Ill. (Prof. Willard) Bulletin 1/2, 117, 120 OR EXTRA GLASS						
SEE F.R. STILL 1922 GUIDE AM. SOC. HEAT. AND VENT. ENGR'S.						
ORDINARY FRAME CONSTRUCTION (.36 X 70 ⁰) = 25 BTU PEK @ PER HR						
GLASS (.18 X 70 ⁰) = 83 BTU. PER @ PER HR						
1 CHANGE AIR PER HR 6075 X .0238 X 70 ⁰) = 1.25 BTU. PER HR. PER CUFT						
1000 BTU = 40 @ WALL. 12 @ GLASS OR 800 CUFT AIR						
AIR 190 to 195 ⁰ 1/4 LEAD PIPE 1 ST FLOOR = 125 BTU OR 8 @ = 1000 BTU						
AIR 175 ⁰ 1/4 " " 2 ND " = 165 " " 6 " = " "						
" 175 ⁰ 1/4 " " 3 RD " = 200 " " 5 " = " "						
THEREFORE: STANDARD CODE ADOPTED BY						
NAT. WARM AIR HEATING AND VENT. ASSOCIATION.						
NAT. ASSOCIATION OF SHEET METAL CONTRACTORS.						
WESTERN WARM AIR FURNACE AND SUPPLY ASSOCIATIONS.						
RECOMMENDED BY COM. AM. SOC. HEAT AND VENT. ENGR'S.						
NETWALL + GLASS + CUFT X 8 = AREA 1ST FLOOR PIPE						
SAME + SAME + SAME X 6 = " 2ND " "						
STACK AREA = 60% of 2ND FLOOR PIPE.						

SECURITY STOVE AND MFG Co. KANSAS CITY Mo. (J.W.M.)						
WIDTH OF ROOM	LENGTH of ROOM - 9 FT HIGH 1/4 GLASS SOUT. EXPOSURE					
	12 FT. WALLS	13 FT. WALLS	14 FT. WALLS	15 FT. WALLS	16 FT. WALLS	18 FT. WALLS
10 FT.	31 49 68 33 57 70	36 54 73	38 57 76	41 60 78	46 65 83	
	1080 1170	1260	1350	1440	1620	
11 FT.	41 66 91 44 76 94	48 73 97	51 76 101	54 79 104	61 86 111	
	1188 1287	1386	1485	1584	1782	
12 FT.	32 35 77 35 57 79	38 60 83	40 63 85	43 65 88	48 71 93	
	1296 1404 1512	1620	1728	1944		
13 FT.	43 73 103 47 76 106	50 80 110	54 83 114	57 87 117	64 94 124	
	4780 113	51 84 116	55 88 120	59 91 124	66 99 131	
14 FT.		39 66 92 1764	42 69 95 1890	45 71 98 2016	51 77 103 2263	
		53 88 123	56 91 126	60 95 130	68 103 138	
15 FT.			43 71 100	46 74 102	52 80 108	
			2025	2160	2430	
			58 95 133	62 99 137	69 107 144	
16 FT.				47 78 108	53 83 112	
				2304	2592	
				63 104 144	71 111 149	
THIS TABLE IS FOR SOUTH EXPOSURE NOTHING HAS BEEN ADDED FOR CEILING LOSS OR FOR WINDAGE						

Table Giving Sizes of Basement Pipe Required for Rooms of Varying Dimensions.

A box that exactly fits the ten square feet of glass is constructed in the warm room, using the ten feet of glass for one side of the box. An electrical heater is installed inside of the box to maintain the temperature in the box at 70 degrees. As the temperature in the box and the warm room are equal, there will be no transmission of heat between them, but there will be a constant loss through the glass into the cold room. This loss is taken care of by the electric current required to maintain the temperature in the box at 70 degrees. The heater is connected to a watt-meter and a simple calculation reduces the current to heat, and the loss in B. t. u. is easily arrived at. You can realize how easy it is to apply similar methods to all kinds of material.

Mr. Tyner asked me if all the various combinations of material have been subjected to such tests.

Answer: No, they just lead pencil most of it. Due to a beautiful law of nature, this is easy and safe. For example, a stone wall twelve inches thick loses 35 B. t. u. at a difference in temperature of 70 degrees. Its heat resistance is then stated as one-thirty-fifth. A brick wall twenty inches thick has, under the same conditions, a loss of 16 B. t. u. and its resistance is called one-sixteenth. If the two walls are joined together they will offer a resistance equal to the combined resistance of the two walls, or $1/35 + 1/16 = 51/560$, and the rate of transmission is the reciprocal of the resistance. That is to say: $560 \div 51 = 11$, and the loss will be

Table No. 1. Showing B. T. U. Lost Through One Square Foot of Various Substances and in Various Combinations.

Substance.	Temperature Difference.			
	C-E	50°	70°	90°
Single glass	1.18	59	83	106
8-inch brick wall.....	.40	20	28	36
8-inch brick wall, furred and plastered.....	.30	16	21	27
Wall of studding, lath and plaster sheathed, papered and siding.....	.23	12	16	21
Ceiling lath and plaster.....	.62	31	43	56
Ceiling lath and plaster and floor.....	.26	22	18	23
Unlined metal roof.....	1.30	65	91	117
Door 1 inch thick.....	.40	20	28	36
One cubic foot per hour.....	.016			

		STANDARD CODE DATA SHEET NO 2						
AREA IN INCHES OF LEADER PIPES FOR VARIOUS QUANTITIES OF NET WALL, GLASS AND CUBICAL CONTENTS AT ONE CHANGE PER HR. FOR 1/2 ADD 50% TO AIR, FOR 2 CHANGES ADD 100%. IF CEILING IS ESTIMATED USE 50% OF NET WALL IN TABLE. FOR EAST AND WEST EXP. ADD 10%. FOR NORTH, N.E. AND N.W. ADD 15%. TO USE TABLE, SELECT QUANTITIES NET WALL, GLASS AND CUFT. ADD INCHES INLET FOR EACH. THE RESULT IS TOTAL AREA OF PIPE/INLET REQUIRED.								
		# INCHES INLET FOR NET WALL		# INCHES INLET FOR GLASS		CUFT AIR	# INLET FOR	
1 st FLOOR	2 nd FLOOR	1 st FLOOR	2 nd FLOOR	1 st FLOOR	2 nd FLOOR		1 st FLOOR	2 nd FLOOR
1	.2	.15	.67	.5				
2	.4	.30	1.33	1.0	100	1	.75	
3	.6	.45	2.00	1.5	200	2	1.50	
4	.8	.60	2.67	2.0	300	3	2.25	
5	1.0	.75	3.33	2.5	400	4	3.00	
6	1.2	.90	4.00	3.0	500	5	3.75	
7	1.4	1.05	4.67	3.5				
8	1.6	1.20	5.33	4.0				
9	1.8	1.35	6.00	4.5				
10	2.0	1.50	6.67	5.0				
20	4.0	3.00	13.33	10.0				
30	6.0	4.50	20.00	15.0				
40	8.0	6.00	26.67	20.0				
50	10.0	7.50	33.33	25.0				
60	12.0	9.00	40.00	30.0				
70	14.0	10.50	46.67	35.0				
80	16.0	12.00	53.33	40.0				
90	18.0	13.50	60.00	45.0				
100	20.0	15.00	66.67	50.0				
200	40.0	30.00	133.33	100.0				
300	60.0	45.00	200.00	150.0				
400	80.0	60.00	266.67	200.0				
500	100.0	75.00	333.33	250.0				
No	DECIMALS BELOW THIS LINE							
600	120	.90	400	300				
700	140	105	467	350				
800	160	120	533	400				
900	180	135	600	450				
1000	200	150	667	500				
2000	400	300	1333	1000				
3000	600	450	2000	1500				
4000	800	600	2666	2000				
5000	1000	750	3333	2500				
6000	1200	900	4000	3000				
7000	1400	1050	4667	3500				
8000	1600	1200	5333	4000				
9000	1800	1350	6000	4500				
10000	2000	1500	6667	5000				
					70000	700	525.00	
					80000	800	600.00	
					90000	900	675.00	
					100000	1000	750.00	

Table Giving Area In Inches of Leader Pipes for Various of Quantities of Net Wall.

11 B. t. u per hour (at 70 degrees difference). If the 11 B. t. u. be divided by the 70 degrees the result

will be .16 B. t. u. That means that one square foot of the compound wall would lose .16 B. t. u. per hour for each degree difference on the sides of the wall. This is called the heat loss co-efficient and all material is reduced to that ratio.

A simpler statement is that the heat lost through one square foot of surface of a substance at one degree difference in temperature on each side, in one hour, is called its co-efficient and is written C-E. This table will serve to illustrate the heat loss of a few items. Practically everything has been reduced to a similar table. Decimals are disregarded, except in the C-E column.

We can now understand how the standard code of warm air heating is arrived at—upon the following assumptions, with zero to 70 degrees conditions: One square foot of ordinary frame wall will lose 25 B. t. u. and one square foot of glass loses 83 B. t. u. per hour, and one change of air per hour uses 1.25 E. t. u. per hour per cubic foot.

I have made up a little table that I think explains itself. It is all right for six conditions of thirty-two different sized rooms if one-sixth of the wall is glass and if the ceilings are about nine feet high. The figures give pipe area instead of pipe diameter. The upper row of figures is for second floor and the lower line for first floor. It can be used for other sized rooms by division. For example, you want the size of a first floor leader pipe for a room fourteen feet by twenty-four feet, with three walls exposed. It will equal two rooms 12x14 feet, with two walls exposed in each. The

table says one such room would require 80 inches leader pipe area. Therefore, a 14x24-foot room would require 160 inches of inlet. You would probably use in a residence two 10-inch pipes or a 14-inch pipe if only one is used.

Here is another table based on the same requirements, giving the leader pipe requirements for any quantity of standard wall-glass of cubical contents. It is accurate and a lot faster than separate calculations.

You have already been schooled in the matter of keeping up the capacity of each pipe at all connections such as runover boxes, connections at register throats and also the throat of the register itself. There is no use in putting in a certain size pipe and then allowing certain places between the canopy and the register face to be of less capacity. In these days of garages in basements and center halls it is more essential than ever before to be sure of the final capacity of every pipe.

good work. You can ask any one for whom we have put in furnaces since 1916, when we started in business, and they will all tell you that when Reichmann & Naidert install a furnace it heats the house without overfiring and without trouble of any kind. That is our chief stock in trade.

"We have the agency for the American Self-Cleaning Furnace and we are going to make it worth your while to have one of these fine



Showing Warm Air Ducts All Taken From Top of Furnace.

Will Real Estate Operators Pay a Fair Price for a Good Furnace Installation?

Reichmann & Naidert, Cicero, Illinois, Know That They Will, for They Did the Work and Got the Money.

OUT in Cicero, Illinois, a suburb just west of Chicago, there has been a great deal of residence building during the past three years—a large portion of it, of course, being done by real estate operators.

As is usual in such cases, the heating jobs in these homes were of the cheapest sort, (the kind referred to by one of the furnace manufacturers at the recent Cleveland Convention as "tin cans") because the real estate dealers, as a class, did not care whether the furnace or hot water installation could really heat the house or not.

However, there was—and is—a firm of real estate operators whose minds were open to argument on a quality basis, and so there has been made an opening wedge in the maze of "bum" jobs.

This firm is known as Kopecky, Hegner & Company.

To them went a furnace installer with a story something like this:

"You folks are building a lot of houses for people in medium circumstances. They are entitled to the best their money can buy. You want to make all you can when you sell these houses, and I suppose you want to sell as many as you can build."

"Now, if I can show you how you can get \$500.00 more for each home than you are getting now, and that out of that \$500.00 at least half will be extra profit, will you be interested in my proposition?"

The "real estater" agreed to listen. He was a Bohemian, the furnace man was a Bohemian, and the neighborhood is being settled by Bohemians to a large extent.

"In the first place," said the installer, "my partner and myself have established a reputation for doing

furnaces in every one of the houses that you build from now on.

"It has not been possible for you up to this time to guarantee that the house you might be attempting to sell could be heated economically and efficiently with the furnace or boiler you had in it.

"If you let us put one of the Americans in the houses you are figuring on building now, we will give you a real guarantee that you pass on to the purchaser—and if with such a guarantee you cannot get at least \$500.00 extra, you are not as good a salesman as I think you are."

The real estate man consented to look at the furnace, and the installer went over every feature,

showing why its construction meant more efficient fuel combustion and heat generation. He went into detail about the installation, showing how he fitted the pipes, boots, wall stacks and registers, and the regulating features, such as chains from the main floor leading to the check and draft dampers, and all the other things that a good installer points out and mentions when he is selling a furnace job.

Finally the real estate man said: "How much are you going to charge me for fifteen of these installations?"

as a result of the satisfaction given with the first lot—this time it was to a competing real estate firm and the sale ran up to sixteen installations in this case.

In addition, they have sold in 1924 about forty to individual home builders, some with four heat runs, some with five (in both cases with two cold air returns). The prices were \$290.00 and \$375.00 respectively.

And still, there are furnace installers who believe that it does not pay to do a good job, and that real estate men will not pay the price



Group of Eight Bungalows at Cicero, Illinois, Equipped with Warm Air Furnaces, Installed by Reichmann & Naidert.

Mr. Reichmann answered:

"Let us take a look at the plans for the houses."

All fifteen were alike, and the price was set at \$255.00 for an 18-inch American Self-Cleaning furnace, with one 9-inch and two 8-inch warm air pipes and one 16-inch cold air return duct.

The houses are of brick, four-room bungalow style, as shown in the accompanying illustration.

It will be noted that the warm air is taken off from the top of the casing instead of from the side, thus giving more head room in the basement, but no trouble has been found from slow air movement, as there is plenty of elevation to the pipes anyway.

An interesting fact is that Reichmann & Naidert sold another block of American Self-Cleaning furnaces

that is necessary to insure a good job.

But, of course, if a person simply will not believe that a thing can be done, it is useless to show him that it is being done.

We are telling this story—the facts of which are without question—for the purpose of helping the furnace installer who wants to do good work, knows how and has sense enough to follow the good example of men who are proving that it pays well to make a good furnace installation.

Reichmann & Naidert, by the way, have been in business only eight years. In 1923 they installed nearly 200 furnaces, and this year they expect to come close to the 300 mark.

It pays to advertise—regularly.

Trade Association Rights Will Be Tested by the National Government.

A test case to determine what industrial trade associations may or may not do is likely to be started by the government. It is hoped that such a case may fix the legal boundaries within which trade associations may collect and distribute business and industrial statistics. It is reported that conferences between the new attorney general, Harlan Fiske Stone, and Secretary of Commerce Hoover have resulted in a decision that the government bring a case for decision by the United States Supreme Court.

So uncertain has been the status of trade associations that a number have ceased their former activities in gathering statistics in co-operation with the government.

It is recognized by many business and industrial leaders that some of the most effective means for reducing the cost of distribution and, therefore, reducing the price to consumers depend upon the collection of these figures.

The question of new legislation to clarify statistical collection and dissemination has been discussed by the Secretary of Commerce and the attorney general, but they do not hope for action at this session of Congress.

Attorney General Stone has stated that he favors making the government of assistance rather than of hindrance to business.

Allen J. "Pop" Ross Drops Dead from Apoplexy in Indianapolis Street.

Once again the grim reaper has stalked silently but suddenly into the midst of the warm air heating industry and has taken from it Allen J. "Pop" Ross, who fell dead suddenly, stricken with apoplexy at Market and Illinois Streets, Indianapolis, Indiana, Saturday, May 3rd. Mr. Ross was apparently in good health and had no warning of the attack which proved fatal to him.

Mr. Ross was 59 years of age and was for many years employed by the

Henry Furnace & Foundry Company, Cleveland, Ohio, in the capacity of salesman and supervisor of the company's branches. He also took a very active part in all association work.

Mr. Ross, familiarly known in the trade by the diminutive "Pop," is

survived by his widow and one son, as well as a host of friends and business associates, whose heartfelt sympathy now goes out to the mourners in their hour of trial and sorrow.

The funeral was held from the Ross home at Bowling Green, Ohio, Wednesday, May 7th.

Allen Designs Warm Air Heating System for Large Residence at Savanna, Illinois.

System Installed in 1915 and Is Meeting Heating Requirements in a Very Satisfactory Manner.

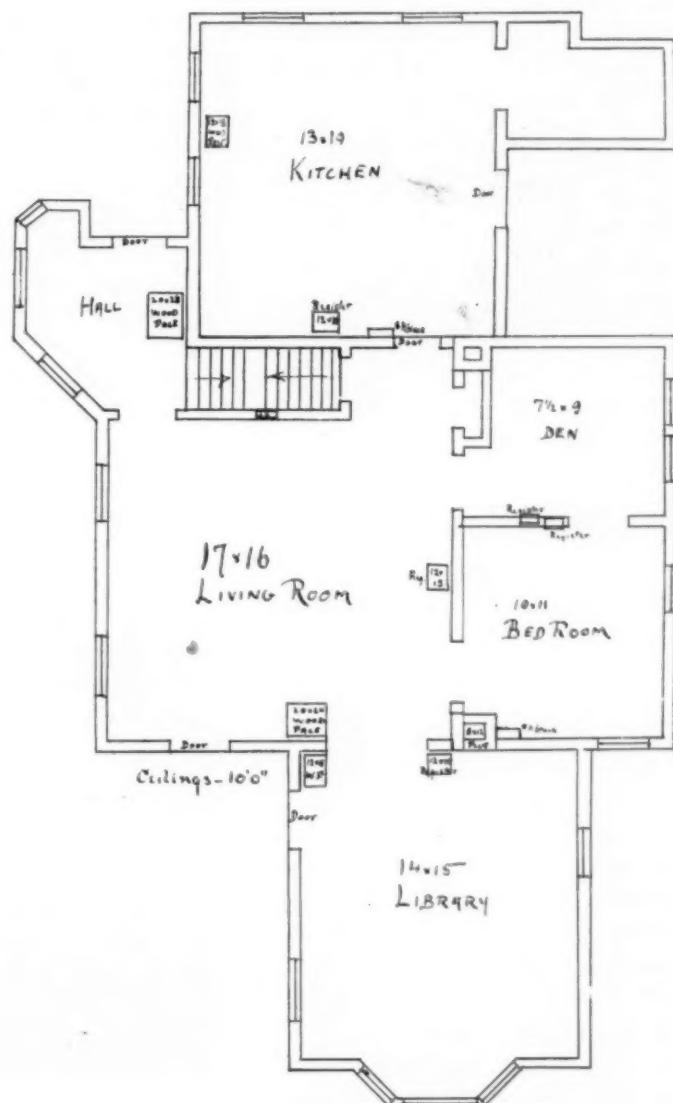
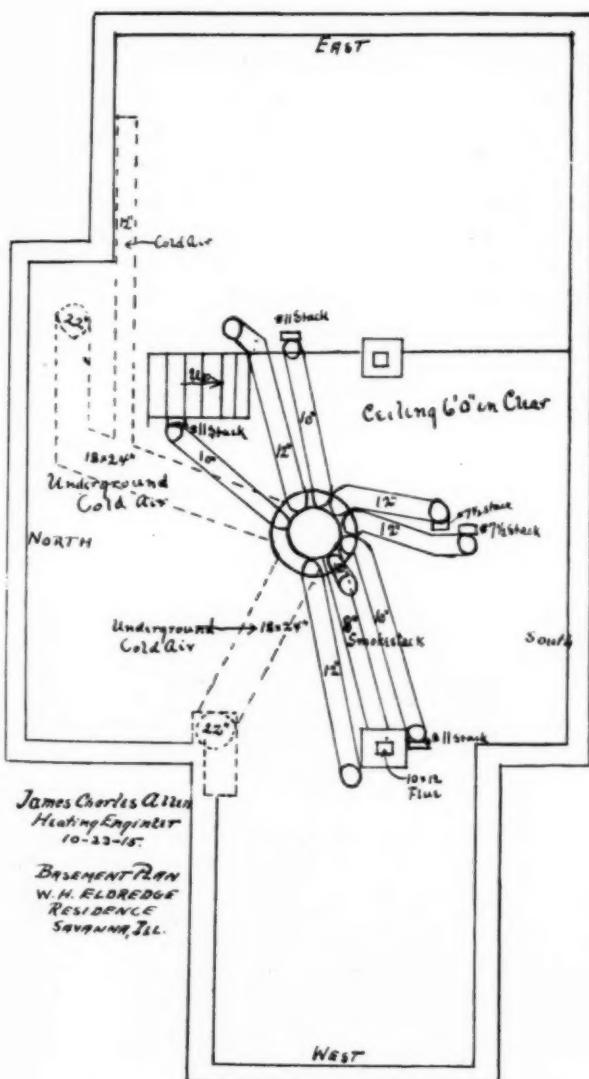
A LOW basement is often the cause for the failure of a warm air heating system to function properly.

The plan of the warm air heating system shown in the accompanying

illustration is that of the house owned by W. H. Eldredge, Savanna, Illinois, and which was designed by James Charles Allen of the International Heater Company, Utica, New York.

Prior to its installation in 1915, the job had been rejected as impossible of accomplishment by every warm air heating man who had been asked to lay out a system for the house. But Mr. Allen's work did the trick and the system now installed is functioning satisfactorily.

In writing about the system, Mr. Allen says a home with a basement six feet high, the second floor ceiling nine feet high and covering a floor space of 30x52 feet, with a north exposure, ordinarily would be considered a steam or hot water job. However, the owner of the property had his own reasons for wishing to install a warm air system. He also wanted a guarantee that the installation would supply heat in sufficient quantities to make the house comfortable.



Basement and First Floor Warm Air Heating Plans of W. H. Eldredge's, Savanna, Illinois, Residence, Designed by James Charles Allen in 1915, and Installed the Same Year by J. S. Raymer & Son, Lena, Illinois.

In this installation all of the runs are single, except as follows: Those running to the bedroom and the room directly over it are double, using 10x12-inch registers on the first floor and 8x10-inch on the second, with a 12-inch run in the basement.

The den and bathroom are treated in the same manner. The runs to the first floor are 12-inch and those to the second floor are 10-inch.

Due to the extreme lowness of the basement, the elevation of the warm air pipes was begun at the furnace, in order to effect a rapid rise, and to give all the head room possible.

Underground ducts are used to transmit the return air. In the construction of these particular pains were exercised to make these return ducts air and water tight, to exclude all possible obstructions to the rapid movement of return air in its passage back to the furnace.

The cold air intakes are all located along the north wall. The kitchen, living room and library cold air registers take care of the requirements of the first floor rooms.

The return air of the second floor is transmitted to the furnace through a register located at the foot of the stairs in the first floor hall.

The furnace has a 29-inch firepot set over the pit and, like the return air ducts underneath the basement floor, it is water tight.

The sizes of the registers used are designated on the plan shown.

All warm air ducts were covered with 14-pound asbestos paper, more to insure a perfectly tight job than to effect a saving of heat.

In considering a job of this nature, Mr. Allen says he always makes his warm air runs as short as possible, in order to transmit the heated air to its destination as quickly and as warm as possible. Also, by introducing a plentiful supply of cold air, he avoids overheating the furnace, which in turn obviates the possibility of burning out the castings.

In all of his layouts Mr. Allen

aims to supply plenty of warm, moist air and a plentiful quantity of return air well placed so that it will not be necessary for the furnace to "breath hard." In his opinion, it is the hard breathing of a furnace that causes drafty circulation.

The house in question contains 19,694 cubic feet; it is supplied with

799 square inches of warm air leads and 873 square inches of cold air returns. Taking into consideration the cold air ducts under the cellar floor, the total number of square inches in returns amounts to 936, which makes the entire installation contain approximately 17 per cent more horizontal runs than vertical runs.

Opportunity for Publicity Seized by C. S. "Doc" Weatherly at "Better Homes" Show.

Grand Rapids Furnace Installer Meets New Customers Face to Face and Pushes His Business to the Fore.

OME men never miss an opportunity to get and keep the name of their business before the public. They know that their future as well as present prosperity depends upon the good will of the public, and it behooves them, therefore, to see that the public has them under observation at all times.

One such a man is C. S. (better known as "Doc") Weatherly, Grand Rapids, Michigan. A "better homes" show was held recently in Grand Rapids and Mr. Weatherly was right on the job with a display of heaters appropriately placarded and attractively arranged so that his business would come before the public viewing the exhibit.

The accompanying illustration shows to what extent Mr. Weatherly pushed his efforts in this particular instance. Due to this persistence

of effort on his part to become known and to have his name associated with good heating and repair work, Mr. Weatherly's business has grown and he has prospered. He builds his business on principle and when called upon to repair a furnace, he gives the customer unstintingly the benefit of his superior knowledge.

His display at the "better homes" exhibit gave him an excellent opportunity to meet personally many of the people who he could make his customers.

Corporate forms do not absolve from or alter the moral obligations of individuals. Responsibilities will be as courageously and conscientiously discharged by those acting in representative capacities as when acting for themselves.



—Courtesy Marlin N. Baker, Grand Rapids, Michigan.
Exhibit of C. S. Weatherly, 949 Cherry Street, S. E., Grand Rapids, Michigan, Staged at the "Better Homes" Show Held Recently in Grand Rapids.

Rural Communities Offer an Abundance of Work for the Wide-Awake Sheet Metal Men.

O. W. Kothe Says Freight Charges on Metal Sheets Much Less Than on the Made-Up Product.

Written Especially for AMERICAN ARTISAN by O. W. Kothe, Principal, St. Louis Technical Institute, St. Louis, Missouri.

IN rural districts tin shops go after the large amount of sheet metal work that the farmers buy from implement dealers, lumber yards, etc. The writer feels that a special opportunity could be made by vast majority of shops if they would wake up and place their service in the right way before the buying community. For instance, as regards manufacturing costs, the country town tinner can turn out the work with little increased cost over the manufactured cost of the city. The country town tinner seldom receives over 15 to 25 dollars a week, while the city sheet metal worker receives as high as 32 to 60 dollars a week; so the difference in wages is a considerable item that quantity production has to cut down. The average between the two gives the country town shop some leeway. Then, again, the manufacturer must discount his product quite heavily to the jobber; who must make his profit of 10 to 20 or 30 per cent; again the jobber must sell to the re-

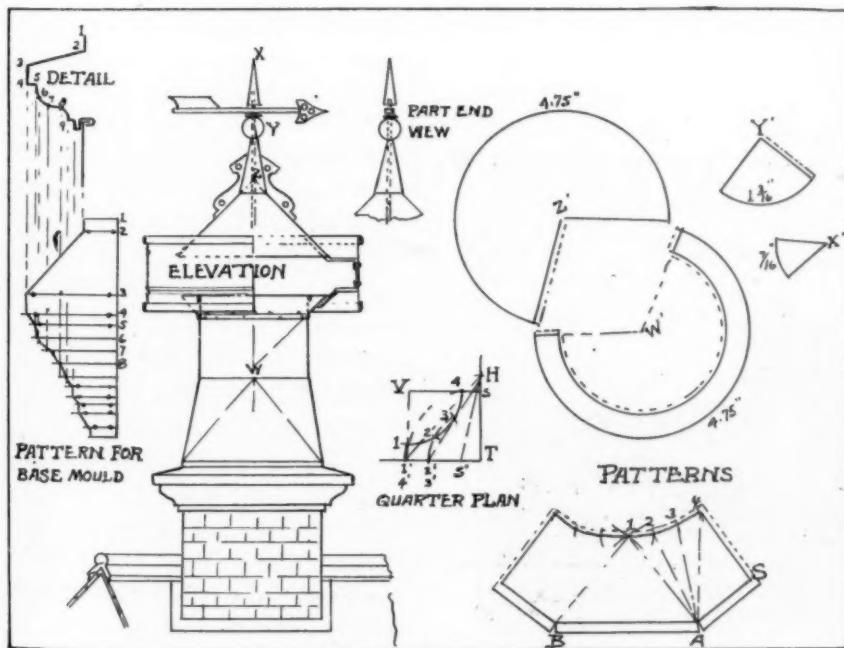
tailer who again must have his profit. The transportation of both the material costs more than the transportation of flat sheets. So all in all the country town shop could make the profit of the manufacturer and jobber as a safeguard and give his customer the benefit of the retailer's profit. That would make work for the country town tinner and it would save the farmer enough to encourage him to give his work at home.

But unfortunately, there are so many of these country town employers who fail to see the advantage in having their men understand more work than just guttering, roofing and installing furnaces. They think that if their workmen were to learn a little more, they would immediately have to pay them more money, and because of that they do not see the increased service such a man could render the employer in doing the multitude of sheet metal work required on the farm.

Nearly every large barn has some

form of ventilator; the majority of these are made similar to the ones shown in this drawing. The manner of making the design can be arranged in many different ways to suit the work in hand, although most jobs are made to stock sizes such as can be purchased in lumber yards and implement shops. Ventilators like this are made in city shops in great numbers of every size, with the exception of the ornamental top, which is omitted and possibly the base with the moulding attached. In observing this ventilator we see most of the work is made to the principle of the cone or a funnel, where the base is square to round, and can be laid out by triangulation and the stem is merely a cylinder made about equal in height to the diameter or as judgment may dictate; while the lower flange is on a flare of 45 degrees and made in length equal to about 1/6 the diameter of stem. Then the top hood is a conical shape made equal to a 45 degree pitch in this case, while in city shops the pitch is generally to a 30 degree pitch; but in this case the 45 degree pitch is used to raise the top and give a substantial body for the weather vane spire. The hood raised from the top of flange is generally made one-quarter the diameter of stem; until considerable foul air or animal heat must escape and then it can be regulated a third or a half the diameter of stem. The wind guard placed on the outside of the ventilator is to deflect the air currents and prevent them from cutting off the air coming out of the ventilator. The distance this guard is away from the edge of hood and flange is about 1/9 the diameter of stem.

The design and height of spire for the weather vane are arbitrarily constructed, and most any person



Pattern for the Construction of a Barn Ventilator.

can design something that pleases his fancy; still it should not look clumsy or be too flimsy. In setting out these patterns we use the radius point X for the spire and Y for the base; Z for the hood and W for the flange. With these radii we de-

scribe the patterns and determine their circumference by multiplying the diameter by 3.1416, which is measured off with a zig-zag rule around the lines thus described. The work is all of such a simple nature that little comment is needed.

Cedar Rapids Sheet Metal Concern Equips Webster City High School With Twenty Monitor Ventilators.

Note Size of the Five in Center as Compared With the Two Men Standing Immediately in Front of Them.

IN THE days of the log cabin and the meeting house with their large open fireplaces, the foul air was carried out through the chimney, and fresh air came in through the cracks between the logs and through the crude doors and windows. Then no other ventilation was needed, but with the progress in building, and as buildings became stronger and were built tight to retain the heat from stoves and furnaces, ventilation was, for many years, forgotten.

Within the past few years, however, the question of proper and scientific ventilation has been given the attention which it justly deserves, and no building for either human beings or live stock is now erected without thought being given to ventilation as a means of maintaining health, the prevention of contagion and for the promotion of efficiency of the occupants. Especially is this true of schools,

churches, auditoriums and other buildings where large numbers of people are wont to congregate.

The accompanying illustration shows the new high school at Webster City, Iowa, designed by the late William Gordon, the well known Des Moines architect, whose business has passed into the hands of Thomas, McLennan & Thomas of the same city.

The ventilating system, part of which is shown here, consists of twenty Monitor Ventilators, manufactured by the Lichy Metal Products Company, Waterloo, and installed by the Cedar Rapids Cornice Works, who had the sheet metal contract.

The battery of ventilators includes six 54-inch, two 20-inch, four 16-inch and four 12-inch Monitor suction ventilators and four 12-inch Monitor stationary ventilators. This makes a most complete system and is rated as one of the best in the

Central West. The illustration gives a very good idea of the appearance and size of the ventilators and also indicates the thought that was given to the health and welfare of the students attending this school.

It is a good example of what ventilating engineering has developed into. The Lichy Metal Products Company maintains a ventilating engineering department, whose services are at the command of their customers.

Carnegie "Tech" Summer Session Will Be Open from June 16 to August 8.

During the Summer session of 1924, from June 16 to August 8, several short, intensive courses for sheet metal workers will be given at the Carnegie Institute of Technology in Pittsburgh, according to an announcement. These courses, which will be given by J. S. Daugherty, head of the department of sheet metal work, it is announced, are intended for young men who need a more thorough training than can be secured in their daily work and who wish to combine practice with theory, thus increasing their efficiency and earning power.

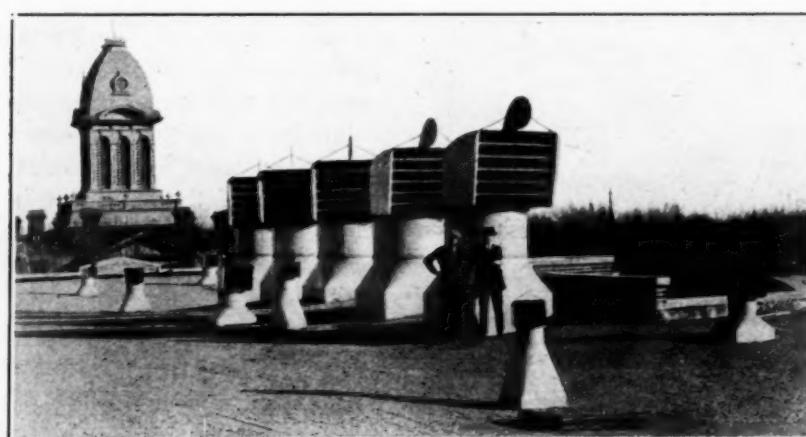
Among the many courses to be offered sheet metal pattern drafting and shop work, heating, ventilating, blowers and exhaust pipe work, skylight and architectural sheet metal work all find a prominent place.

Further information and application blanks can be obtained by addressing the Director of the Summer Session, Carnegie Institute of Technology, Schenley Park, Pittsburgh, Pennsylvania.

C. F. Bemis to Open Radiator Repair Shop at Clear Lake, Iowa.

C. F. Bemis, Clear Lake, Iowa, is opening a tin and radiator repair shop and will appreciate receiving manufacturer and jobber catalogs.

Mr. Bemis was formerly the manager of the Atlantic Sheet Metal Works, Atlantic, Iowa, but he disposed of that business recently to Guy Fulks of Atlantic, Iowa.



Battery of Lichy Monitor Suction and Stationary Ventilators Installed by Cedar Rapids Cornice Works on Webster City, Iowa, New High School.

Secretary Koenneman, Iowa Auxiliary, Outlines Purposes of Membership.

Explains Methods of Procedure With Regard to "Price" Contracts—Issues New Auxiliary Roster.

THE 1924 Jobbers' and Salesmen's Auxiliary membership roster of the Iowa Sheet Metal Contractors' Association is now off the presses and available for distribution.

To a rank outsider this roster is merely a list of classified names and addresses correctly spelled and conveniently arranged for purposes of reference, to be filed in some handy desk drawer or hung on an office wall.

To the wide-awake and knowing sheet metal contractor, however, this list has a far greater value; it is a physical and tangible evidence of the decision of the men whose names appear thereon to put themselves on record as working for better trade conditions and more pleasant relations in the industry of which they are a part—a creditable work, indeed.

Together with the copy of the roster which came to AMERICAN ARTISAN, there came also a letter from Secretary W. C. Koenneman of the Jobbers' and Salesmen's Auxiliary. The purport of this letter was to convey, first, the objective of the organization as seen and understood by the individual members; secondly, some of the outstanding difficulties with which these worthy men are obliged to contend; thirdly, how they are attacking their problems.

In order to show the importance of the heating plant in a home, Secretary Koenneman metaphorically removed the plumbing and the heating plant from a private dwelling, thereby showing which item could be dispensed with with the least inconvenience to the occupant. Needless to say, the warm air heating plant was found to be the most indispensable.

He then outlined the train of reasoning used by the man who obtains his work on a price basis, instead of

figuring on quality work and a fair profit for himself. Needless to say, the letter gives the dealer who indulges in these practices little credit for having the backbone necessary to conduct an upright and honorable business.

He said:

"The warm air man first studies as near as 100 per cent satisfaction, then he figures the job large enough so that it will give plenty of warm air without forcing; by doing this he adds from eight to ten years to the life of the plant. He sees that all joints are sealed and the job is left in A-1 condition. He has received for this job money enough so that he can make his guarantee if he is called on, and when the customer meets him on the street as a rule has a prospect or two for him. Thus the whole transaction from start to finish can not be anything but pleasant.

"The hot air man only studies the satisfaction of his customer only 5 per cent, the difference between the two is 95 per cent. This is too much. About the only thing he has to offer is price, and his price is generally so low that he does not even get a good living out of it, and then his installation, in line with the price he received, can not perform properly. The chances are that his customer gets along fairly well the first year, but the second year the complaints begin to come in and then the dealer's grief begins. The result is the dealer gets down in the mouth and the customer gets sore and begins to condemn the warm air heating plant, thinking this is what he had. In reality he only had a hot air plant that could not breathe or anything else; in fact, I believe this consumer only bought a case of asthma."

Thus, indeed, to overcome false impressions of a good system is a noble purpose being forwarded by

these men who have banded themselves together to protect not only their own interests, but those of the public likewise.

Lamneck Suggests Establishing Clearing House to Dispose of Used Tools and Excess Materials.

The message given hereinafter is a copy of a letter which George F. Mooney, Secretary of the Sheet Metal Contractors' Association of Ohio, mailed to the secretaries of the various Ohio locals. The suggestions contained therein can be used to good advantage by the secretaries of other state and local organizations.

Secretary Mooney's letter follows:

W. E. Lamneck has made the suggestion that possibly the state association might render an added service by acting as a clearing house for the sale or exchange of used tools and excess materials between the members.

It has evidently come to his notice that in the rearrangement of shops tools are supplanted by other models that might be highly desirable to other members. Also, many times when a contractor has finished an operation he has left on hand an excess of material of a type that will move slowly for him and which it would be economical to dispose of by sale.

If you will circularize your members and bring the subject up at meetings, we will soon learn if there is a need of the service we are suggesting; forward your wants to this office and we will communicate it to the other local associations.

The important event of the year is the convention in Columbus, July 22 to 24. Do not fail to have it discussed at every meeting and forward your suggestions.

Truly, it will be a feast of reason and flow of soul.

Very truly yours,
GEORGE F. MOONEY.

To improve your prospect of getting somewhere, always come to the point quickly.

New York Sheet Metal Men Seek Active Assistance of Manufacturers and Jobbers in Marketing Products.

Syracuse Convention Unanimously Voted Huge Success—Next Convention to Be 2-Day Affair.

THE resolutions passed by the New York State Sheet Metal Contractors' Association at its Syracuse convention, April 30th, are as follows:

Be it resolved, that sheet metal contractors should be ever active in advancing the interests of the trade by keeping abreast or ahead of the times and always on the lookout to see that sheet metal work of every kind is done by sheet metal contractors, and thus prevent it from falling into the hands of other trades;

That it be recommended to our members and to the trade at large that the interests of our customers, who support our business, are paramount; and that the best business policy is to so run our business as to serve our customers to the fullest possible degree. Their interest can only be served efficiently and satisfactorily when the sheet metal contractor secures prices which will enable him to pay his bills promptly and in full meet the necessary overhead expenses, and have a reasonable and actual net profit as a reward for his industry, skill and service. The interests of customers will also be advanced by an intelligent understanding on their part that they cannot be served to the best satisfaction by handy men, and men of other trades to whom sheet metal work may be only a side issue;

That the best interests of the sheet metal trade can be served most efficiently through the efforts of legitimate sheet metal contractors. Therefore, jobbers and manufacturers will best serve the industry and thereby themselves by marketing their products through sheet metal contractors rather than by competing with sheet metal contractors by selling to contractors or owners;

That we request the active assist-

ance of the manufacturers and jobbers in marketing sheet metal products through sheet metal contractors:

That the thanks of this organization be extended to the jobbers, to AMERICAN ARTISAN, to *Sheet Metal Worker*, and to Edwin L. Seabrook, Secretary of the National Association, for the active and efficient assistance given in promoting and advertising this convention;

That a special vote of thanks be extended to U. T. Hungerford Brass & Copper Company for their personal letter sent out to their customers urging them to attend this convention;

That the sincere thanks of this organization be extended to the Sheet Metal Contractors' Association of Syracuse for its hospitality and for the cordial and splendid manner in which it has welcomed and entertained the delegates and visitors to this convention;

That we approve of the advertising of sheet metal products by the organization of manufacturers who have been, and are, conducting campaigns to increase the use of sheet metal products;

And be it further resolved, that such advertisers be requested to work entirely through the sheet metal trade.

In addition to the resolutions mentioned heretofore that were passed at the convention of the New York State Sheet Metal Contractors' Association, a resolution on the death of Frank K. Chew was also passed.

Wisconsin Sheet Metal Men Will Circularize Architects.

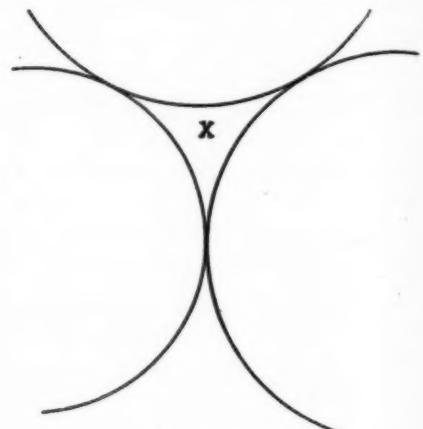
The Directors of the Wisconsin State Sheet Metal Contractors' Association lost no time in carrying out the plans of the state convention held in March, to acquaint archi-

tects with the merits of sheet metal. A monthly letter for the next four months will go to all the registered architects of Wisconsin, dealing with metal cornices. Succeeding letters each month will be sent to the architects, also dealing with some phase of sheet metal work.

The Wisconsin state association takes the lead in sheet metal promotion work. Which state association will be the next to adopt this plan?

Here's a Problem That Will Test Your Ingenuity.

The figure herewith represents three large cylindrical tanks of unequal diameters. A sheet metal contractor has been lowered between these tanks at X with a 30-foot string and a pocket rule and told to figure out the diameters of



Find the Dimensions of These Tanks.

the tanks. If he fails he must remain in the hole. If he succeeds he is to be drawn out and given a contract for making three more tanks of like dimensions.

How did he figure himself out of the hole and get the contract?

H. FRYE.

Tullahoma, Tennessee.

They Believe in Advertising Their Membership.

The members of the Washington, D. C., local sheet metal association believe in letting those with whom they correspond in a business way know that there is a sheet metal contractors' association in Washington and that they are members of it.

Below the signature on the letter is stamped these words: "Member Sheet Metal Contractors' Association."

This method is commended to the favorable attention of other local associations.

**Shouldice Brothers,
Battle Creek, Go in
for Abundant Welding Work.**

Sheet metal men as a general rule do not realize the great possibilities in the soldering and welding field.

True, many of them have established very elaborate and successful soldering businesses, which are particularly productive of profit when other outside work cannot be done. By this means some sheet metal shops have been able to go a long way toward ironing out the valleys of depression and in some instances even raising them up to the peaks. As a general rule, however, sheet metal men have not taken full advantage of the opportunities open to them in this field.

Among the instances coming to our attention of men who are working this field is Shouldice Brothers Sheet Metal Works, Inc., 79 West Jackson Street, Battle Creek, Michigan.

We have reproduced an advertisement of this company calling attention to the welding—heavy and light—which it does.

It must be borne in mind, however, that the man who undertakes to establish a business of this sort must have proper equipment in readiness at all times. The jobs are hurry-up jobs and emergencies for

the most part and require about the same speed and attention that would be accorded a frozen automobile radiator repair job and the fellow with the proper equipment at the time it is needed carries off the bacon.

**Peck, Stow & Wilcox Company
Expands in Cleveland.**

The Peck, Stow & Wilcox Company, Southington, Connecticut, and Cleveland, Ohio, has placed a contract for the erection of two new industrial buildings for the Cleveland plant. H. K. Ferguson Company, Cleveland, will be in charge of construction, which will cost, it is said, in the neighborhood of \$60,000.

The additions are to be made on the same site with other Cleveland plant buildings and will be under the management of O. J. Blank.

Notes and Queries

Teleprofit Loose Leaf Book.

From Smith Plumbing and Heating Company, Anamosa, Iowa.

Please tell us where we can get the Teleprofit loose leaf book, made by the Interstate Grocer, St. Louis.

Ans.—From the makers, Interstate Grocer, Calumet Building, St. Louis, Missouri.

Stove Boards.

From Stove Dealers Supply Company, 310 Chestnut Street, Milwaukee, Wisconsin.

We should like to know who manufactures stove boards.

Ans.—Merchant and Evans Company, 347 North Sheldon Street,

We Do All Kinds of

Heavy and Light Sheet Metal Work Ox-Acetylene Welding

Electric Arc and Spot Welding—Furnaces and Furnace Repair Work

NO JOB TOO LARGE OR TOO SMALL

Shouldice Bros. Sheet Metal Works Inc.

79 West Jackson St.

Phone 246.

How Battle Creek, Michigan, Firm Makes Its Bid for Welding Work.

Chicago, Illinois; Belding - Hall Company, Belding, Michigan, and Wabash Screen Door Company, 72 West Adams Street, Chicago, Illinois.

"Buckeye" Register.

From J. W. Beard and Brother, 232 East Short Street, Lexington, Kentucky.

Who makes the "Buckeye" registers?

Ans.—Buckeye Blower Company, 425 West Town Street, Columbus, Ohio.

Nickel Silver Sheets.

From The Warnke Brothers Company, 305 Nebraska Avenue, Toledo, Ohio.

Kindly advise where we can buy nickel silver sheets.

Ans.—American Brass Company, 604 Union Central Building, Cincinnati, Ohio, and Merchant and Evans Company, 347 North Sheldon Street, Chicago, Illinois.

"Aeolus Dickinson" Ventilator.

From J. H. Barnett's Sheet Metal Works, 312 West Front Street, Dodge City, Kansas.

Please advise me who makes the "Aeolus Dickinson" ventilator.

Ans.—Aeolus Dickinson Company, 3346 South Artesian Avenue, Chicago, Illinois.

Lightning Rods.

From Ed. D. Pace, Papillion, Nebraska.

Who makes lightning rods?

Ans.—L. F. Diddie Company, Marshfield, Wisconsin; U. T. Hungerford Brass and Copper Company, 80 Lafayette Street, New York City; Reyburn-Hunter-Foy Company, 815 Broadway, Cincinnati, Ohio, and Dooley Lightning Rod Company, Topeka, Kansas.

Magnesite Calcined and Magnesium Chloride.

From C. McEntarfer, Eureka, Kansas.

Please tell us where we can buy magnesite calcined and magnesium chloride.

Ans.—Innis, Speiden and Company, Incorporated, 118 and 120 West Kinzie Street, Chicago, Illinois.

"Our Own" Steam Boiler, No. 636.

From DeWeese Radiator and Repair Shop, 814 Barr Street, Fort Wayne, Indiana.

Can you tell us who makes the "Our Own" steam boiler, No. 636?

Ans.—National Radiator Works, Johnstown, Pennsylvania.

Fanning "Providence" With An Impressive Brush and Paint Display to Attract Profits.

Howard C. Crabb Originates Method of Keeping Customer Cool While Selling Him Paint, Brushes and Accessories.

CLEAN up and paint up is the by-word in every household these days.

The accompanying window display, arranged by Howard C. Crabb, for Belcher & Loomis Hardware Company, 83-91 Weybosset Street, Providence, Rhode Island, shows how a little thought will produce a window display which will put the idea across in a much more forceful manner than a window cluttered up with stacks of paint cans.

The fan background consists of twenty-three separate pieces of wall board, each piece having a dif-

ferent color, a card on each telling the color

The fan is eight feet high and thirteen feet long.

On either side near the glass two more of these fan-shaped panels were used to show two additional colors. In the display were used two round-top panels, one black and the other white.

Two signs are seen, one telling the prices and the other telling about the quality of the paint; these with a few cans of paint and some brushes and two bunches of holly-hocks to add life made a very attrac-

tive display. This display could not fail to attract the attention of the passer.

Chicago Hardware Club to Seek New Quarters.

At a meeting of directors and members of the Hardware Club of Chicago it was decided to keep the club intact and to move to other quarters.

The present club location in the State-Lake Building was secured under very favorable terms, but the rental costs of this particular neigh-



A One Hundred Per Cent Paint Display Which Eliminates the Necessity of Cluttering the Window With Meaningless Cans of Paint.

borhood have risen to such a point that it was not considered wise to renew the lease in the present location.

A committee has been appointed to select another place, and action is expected very shortly, as the club gave up its present quarters on May 1.

Reading Hardware Company Buys Building in Chicago.

The Reading Hardware Company, Reading, Pennsylvania, has pur-

chased through their local manager, H. B. Macrae, a building at 311-315 West Lake street, Chicago. The building is four stories high and measures 20x180 feet. Due to existing leases, the Chicago office will not be moved from its present quarters at 117 West Lake street this year.

In the meantime extensive alterations will be made on the new property to bring it up to the standard required by the company and make it a counterpart of the houses in Philadelphia and New York.

investment. There are always ways and means to get more business, and unless we secure a volume in proportion to our investment, our cost of doing business will be at an altitude that will prevent a fast growth by making our retail prices too high.

The cost of doing business needs to be restrained, governed, and carefully regulated; for, if our costs of operation increase without a corresponding increase in profitable business, our profits vanish and possibly a loss ensues. On the other hand, if we can organize our advertising and other selling factors so as to increase our profits, these latter increase rapidly. It is then easy to further increase our volume for the reason that we can keep our retail prices at a lower point, as the increased volume has automatically reduced the cost of operation.

Increased volume of sales allows us to purchase in large quantities and at a lower figure.

The Cat Chasing Its Tail.

I am a fanatic on this angle; for when we are able to restrain, govern and regulate this part of our business, to my mind the largest difficulty is solved. In our section of Pennsylvania a hardware merchant operating on a 25 per cent overhead is not going to have any real profit and hardly a fair salary for the owner, but if increased sales can be secured with a small additional overhead, the profit will appear, and as it appears, if properly controlled, it will continue to reduce the overhead by increasing the volume.

This increased volume can be secured by so arranging our lines of merchandise that there will be no dull season. Twelve months of activity are necessary to increase volume and decrease cost of operation. I remember the time when in our business we had four months of good business, four months of poor business, and four months of no business. Now we have twelve months of business and the old four months in which we had no business are now called the busy months. Add new lines of anything that can be sold. It's necessary to sell continuously to make money.

Advertise all the time and in every way; catalogs, sales letters, canvassers, newspaper advertising are all good. But sufficient time and thought must be given to advertising so that we will know that it gives the desired result. Here again restraint and regulation are needed. We spend 1 1/4 per cent of our gross sales for advertising. At one time we spent a much larger percentage, but our increased volume has reduced the cost.

Some time a mail order business can be developed that will help to reduce the overhead and the salesman can fill the mail orders easily in the morning or late in the afternoon, thus increasing the volume and decreasing the overhead.

How to Decrease Cost of Operation.

Getting all the business in sight is the best way of increasing the volume and decreasing the cost of doing business. We get all we can at a good profit, then all we can at a fair profit, and then when we can't get either of these varieties we fill it with business at a gross profit as low as 10 per cent, and often this is good business. We furnish leather belting to the factories in our city for shipment from the mill at 10 per cent profit; we also sell the blacksmiths who pay their bills promptly their supplies on the same basis. In fact, we are glad to have all

Robert J. Murray Believes Manufacturer to Jobber to Retailer Most Efficient Method of Distribution.

Retailer Must Reduce Operating Expense by Increasing Sales Volume Throughout Entire Year.

DISTRIBUTION is a problem that requires thorough study in order to evolve the most efficient method of accomplishing this work. This was the gist of an address by Robert J. Murray, Honesdale, Pennsylvania, while speaking at the convention of the Pennsylvania and Atlantic Seaboard Hardware Association at Philadelphia.

Distribution.

Efficient distribution of merchandise will always be a problem. In a recent interview with a man who helps to direct the policy of one of our largest mail order houses I was surprised to learn the many disadvantages and annoyances encountered in this method of distribution. This man said that his company was seriously considering the advisability of establishing stores and stocks at various advantageous points so that it could come into a more personal contact with its customers and eliminate a large waste of advertising.

One of the largest and most prominent manufacturers of a household article that is sold by canvassers direct to the lady of the house has stated that when his salesmen sell a one dollar article to a customer only 25 cents of the dollar arrives at the treasurer's office in payment of the merchandise. The other 75 cents is consumed in distribution: canvasser's commission, 40 cents; district supervisor of canvassers, 15 cents; state supervisor, 10 cents, and general sales office, 10 cents.

If this \$3.00 per dozen article were sold to the jobber at \$4.00, and by him to the retailer at \$6.50, it could be handed to the consumer at 75 cents, and the method of distribution considerably improved. Then again, if the wholesaler could reduce his costs of operation and

furnish the same article to the retailer at \$5.00, and if the retailer had his overhead in line, it should be possible to sell the good housewife this particular item as low as 60 cents.

Is Present Method of Distribution Justifiable?

The manufacturer to jobber to retailer system has apparently been successful and is the recognized method in which we, as retailers, are most vitally concerned. However, a considerable number of consumers are much of the opinion that the cost of distribution through this channel is excessive; and most of us who consider the matter carefully must admit that Mr. Consumer has some grounds for complaint.

Is it not true that the costs of distribution of the manufacturer, wholesaler and retailer could be reduced? Many manufacturers feel that the profit required, or at least exacted, by the jobber and retailer tends to check the flow of merchandise to the consumers, and many retailers feel that the costs of distribution of the manufacturer and jobber reflected in his cost of merchandise prevents him from competing successfully with the mail order house and canvasser. The jobber also has his complaint of being located on the middle of the log, with the retailer and manufacturer sawing off the supporting ends.

It would appear to be the time for the manufacturer, jobber and retailer to burn midnight oil on this proposition; eliminate all frills and fancies, and work out the details of this one method of distribution so that we may convince our friend, Mr. Consumer, who feeds and clothes us all, that we are rendering a real constructive service at a fair price and so prove that our method of distribution is the only proper one for him.

Sales Volume Must Increase.

For economical distribution it is necessary to do sufficient business to bring our costs of operation in line with our

the business we can get at a 10 per cent profit on a cash basis, and for direct to the customer shipment. We believe it is possible to make money by this method and it helps volume and decreases overhead. Increased volume with the same or a little more stock is the answer to most of our troubles. Call it "turnover" if you will, but make it turn over often. We must control and direct this, the most important part of our business, so that we can turn over our stock four or five times a year and, of course, the oftener the better.

In controlling costs of operation I do not believe in reducing salaries or wages; on the contrary, I believe in increasing them, but in making everyone, particularly the bosses, earn more either with their brain or muscle. Some of us think we are working too hard, but generally if we study our job we find that it is not so much hard work as misapplication and bad management that tires us. Only too often we, as owners or managers, are wasting our energy at work which someone else for far less salary than we draw could do better.

reer and this should be remembered.

And the housewares dealer should remember that he is doing a public service of no little importance when he is helping the bride make a good start in keeping house.

More than anything else, selling the bride requires tact, and the sympathetic understanding which is the basis of tact.

But that isn't all. In order to get the most out of the available newlywed business in town, systematic as well as sympathetic selling is needed. A complete campaign should be laid out and regularly followed up.

The best system to catch the bride is to follow carefully the personal and society items in the local newspapers and keep a card file of all prospects. As soon as an engagement is announced, fill out a card. When the bride's parents give a party, or the bride's friends give her a shower, make a record of the names and addresses of all present. This will make up the "gift list."

Alden D. Groff Maintains That Happiness, Good Cooking and Good Kitchen Utensils Are Congruent.

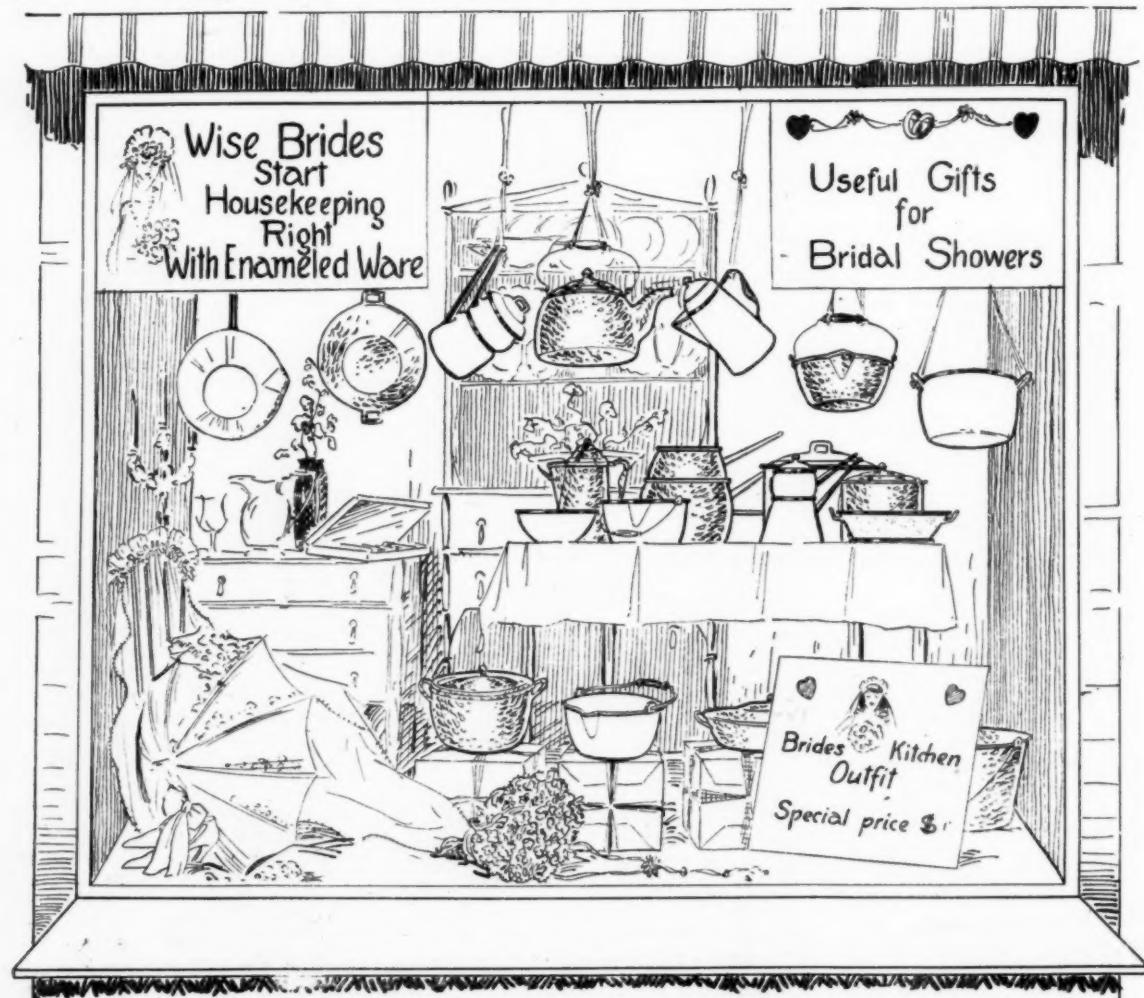
Says Store Man Can be of Great Service to Young Bride in Helping Her Select Equipment Necessary.

THE service department of the Associated Manufacturers of Enamored Ware in the following article tells how to capture the June bride enameled ware sales business.

What customer or prospect is more important than the bride? What customer is deserving of more

attention, more thought and selling sense than the bride?

It is not only that the newlywed buys more at one time—that alone would justify the utmost sales effort. But a new matron will never forget the way she is served by dealers at the outset of her housekeeping ca-



Bride's Kitchen Utensil Window Display.

If the families of the couples are or have been your customers, you would be justified in sending a polite letter of congratulation. When the marriage date is announced it is time to begin circularizing the bride. A series of three tactful letters should be sent out, calling attention to the special opportunities afforded by your store for complete kitchen outfitting. These should be individual typewritten letters rather than printed circulars. A series of two letters should be sent to the "gift list"—all those friends who would be likely to send presents or contribute to showers. If the bride belongs to some organization, a note suggesting that the members get together at the store and pick out a complete set of cooking utensils might be effective. The friends' main problem is the fear of duplicating presents.

The bride's main problem in buying housefurnishings is ignorance of what is really necessary and what is unimportant. Here is where the dealer can be of real service. He can suggest, for instance, the minimum outfit of enameled ware kitchen utensils the young woman should buy, and he can keep her from buying a lot of knick-knacks that she really doesn't need and which she is very likely to buy at the expense of the things she really does need.

And he can be of real help in suggesting the type of utensils she should buy. Most girls dread the idea of taking up the household drudgery tasks. The dealer who explains how and why enameled ware is easy to clean and to keep clean, and how its smooth, vitreous surface is impervious and sanitary, will be doing much to reassure the bride.

And here, also, is where the combination idea works in beautifully and logically. Since the young woman is buying a number of pieces anyway, why not suggest and offer a complete outfit at an attractive even price? Enameled ware, for instance, offers such a wide range of utensils at various prices that it is easy to make up a number of outfit-

s at different prices. For example, a simple outfit of necessities would include a tea kettle, coffee pot, dishpan, rice boiler, two or three saucepans of various sizes, pudding pan, mixing bowl, spoon, pail, Windsor dipper, colander.

A graceful way of getting good will is to "throw in" something extra as a gift from the store. In fact, such a gift can be advertised in the circular or letter.

Another good way of selling outfits is to sell, say, a complete set of enameled ware kitchen utensils, with such accessories as cutlery and wire goods, with a kitchen cabinet at a "special" price.

The bride idea is a particularly good one to use as the general theme of a window display. Use plenty of color; use ribbons and flowers. An artificial flower bridal bouquet, a cheesecloth "veil," slippers, confetti—all these are easy to get and arrange attractively. On the window cards paste pictures of brides, which you can cut out of women's magazines.

Barnes Shows National Signification of Bank Resources and Thrift Savings.

Julius H. Barnes, President of the United States Chamber of Commerce, recently made an address on the "National Significance of Bank Resources and Thrift Savings" before the American Bankers' Association. This address is embodied in a small pocket size pamphlet which is now available for distribution.

Coming Conventions

Panhandle Hardware and Implement Association, Amarillo Hotel, Amarillo, Texas, May 12, 13 and 14, 1924. C. L. Thompson, Secretary and Treasurer, Canyon, Texas.

National Association of Stove Manufacturers, Hotel Astor, New York City, May 14 and 15, 1924. Allen W. Williams, Temporary Secretary, 52 West Gay Street, Columbus, Ohio.

Southeastern Retail Hardware and Implement Association, composed of Alabama, Florida, Georgia and Tennessee. Convention and Exhibition, Atlanta, Georgia, May 27, 28, 29, 1924. Walter Harlan, Secretary, 701 Grand Theater Building, Atlanta.

Western Warm Air Furnace and Supply Association, Savery Hotel, Des Moines, Iowa, June 11, 1924. John H. Hussie, Secretary, 2407 Cuming Street, Omaha, Nebraska.

National Retail Hardware Association Congress, San Francisco, California, June 16, 17, 18 and 19, 1924. Herbert P. Sheets, Secretary, Indianapolis, Indiana.

Hardware Association of the Carolinas Convention, Wrightsville Beach, North Carolina, June 17, 18, 19, 1924. T. W. Dixon, Secretary-Treasurer, 717-718 Commercial Bank Building, Charlotte, North Carolina.

Convention National Association of Sheet Metal Contractors of the United States, Raleigh Hotel, 12th and Pennsylvania Avenue, N. W., Washington, D. C., June 17, 18, 19 and 20. Edwin L. Seabrook, Secretary, 608 Chestnut Street, Philadelphia.

Michigan Sheet Metal and Roofing Contractors' Outing to Quebec, July 19 to 26, 1924. Frank E. Ederle, Secretary, 1121 Franklin Street, S. E., Grand Rapids, Michigan.

Ohio Sheet Metal Contractors' Association, Southern Hotel, Columbus, Ohio, July 22 to 24, 1924. George F. Mooney, Secretary, 213 First National Bank Building, Columbus, Ohio.

Pennsylvania & Atlantic Seaboard Hardware Association Convention and Exhibition, February 16 to 20, 1925, at Philadelphia Commercial Museum. Sharon E. Jones, Secretary.

Retail Hardware Doings

California.

The firm of Sweeney and Hagedorn, who have been conducting a hardware store at 23 Washington Street, Petaluma, has been dissolved, Mr. Sweeney retaining the business.

Colorado.

Leonard Hughes, widely known hardware and electrical dealer of Denver, has been granted a concession in the Loop market by Manager Bob Fay for the Loop Market Hardware shop.

Idaho.

Articles of incorporation have been filed by the Snyder Hardware Company of Filer. It is capitalized for \$25,000. O. C. Johnston and E. H. and M. E. Snyder are the incorporators.

Illinois.

W. H. Hussey, formerly of Amboy, Illinois, and L. H. Bourne, from Sycamore, experienced hardware merchants who recently purchased the hardware department of D. C. Purdy and Sons' business at Highland Park, have opened their new store in the Moldaner and Humer Building, 18 North Sheridan Road.

The Forest City Sheet Metal Company has opened a new hardware shop at 723 West State Street, Love's Park. Merrill Parker will manage the new store.

Indiana.

A. L. Turner and Son of North Manchester have traded their hardware store to L. A. Naber for a 205-acre farm east of Servia and a 95-acre farm east of North Manchester.

Michigan.

A new hardware store has been opened at 709 North Westedge Avenue, Kalamazoo, by Neil Moerdyke. It is known as Moerdyke Hardware.

Display and Demonstration Play Primary Part in Successfully Selling Canning Utensils.

People Buy What They See and What They Are Taught to Use to Save Time and Labor.

THE canning season will soon be in full swing, and sales of canning utensils will be greatly increased if appropriate displays are made.

The accompanying illustration depicts very strikingly the latest Lorain canning window display as described in the canning issue of *Magic Chef*.

Never in the past have women been so interested in labor lightening and time saving in the home. They are alert and anxious to be shown all the newest developments in kitchen equipment.

A canning demonstration is perhaps the easiest to "put on" with or without "outside help," and it is one of the most valuable, because it offers to the community something so new as to still be a novelty. Plan carefully, with the coöperation of the sales and advertising departments, so that the demonstration may be well advertised and followed up for sales results.

Early in the day, when the market selections are good, purchase the fruits to be canned, choosing for the first demonstrations those products which take the least preparation. Before the audience gathers, do as much of the preliminary work as possible; remember that the busy home manager left her other duties and pleasures, not to watch someone pick over berries, wash tomatoes, or pit cherries, but to be convinced of the time-saving value and practicalities brought out by the demonstration.

The time announced for the demonstration will depend largely upon local conditions and upon the nature of the demonstration. A continuous demonstration is apt to be difficult to handle, owing to the need for constant repetition of the process and the explanations. It is usually better to limit the time to a half day, with a definite hour for the lecture.

A canning demonstration combines nicely with a baking demon-

stration, if two stoves are connected and a continuous demonstration seems practical.

The canning demonstration must be started early in the afternoon, because the time required for sterilizing the canned fruits would run past closing time if started too late. It is a splendid idea to place a few jars of the fruit in the oven before lunch, timed to be taken out at the beginning of the lecture in the afternoon. This gives an opportunity to show the entire process in less time than it would take to complete the whole piece of work.

Then we come to advertising. The oldest, most natural medium for advertising is the space in the dealer's window and store, and this space should be worked and worked hard. Make references to the window display in your advertisements.

Controversy should, where possible, be adjusted by voluntary agreement or impartial arbitration.



Illustrating the Latest and Most Successful Lorain Oven Canning Window Display Scientifically Worked Out.

Hardware Store Advertisements No Longer Confine Their Contents to Strictly Hardware Articles.

Natural Progressiveness, Together With Drug and Chain Store Competition, Have Produced Revolution in Hardware Sales Methods.

AN EXCELLENT representation of the extent to which the hardware man has invaded the so-called territory of other businesses, just as the drug store and chain store have trespassed upon his field, is had in the accompanying illustration taken from the *Scranton, Pennsylvania, Times*.

the old idea of a hardware store and the man who follows it will meet and compete with the chain stores with their own tactics.

* * *

The hardware store of yesterday has taken its lesson from the 5 and 10-cent store and the so-called corner drug store. It now offers its

offering wall paper by a hardware store was taken from the *Hazleton, Pennsylvania, Plainspeaker*.

BUCKEYE INCUBATORS
Guaranteed to hatch more chicks and stronger chicks.
SEVEN SIZES
65 TO 600 EGGS

BUCKEYE COLONY BROODERS
Grow 3 chicks where 1 grew before.
Raise Every Raisable Chick
Save Time, Labor and Expense

GRIT, OYSTER SHELL & CHARCOAL
Grit is necessary as a means of assisting the hens in grinding her food. Oyster Shell provides a supply of lime which forms the shell. Charcoal is a blood purifier and a disease preventative. It is one of the best remedies for sour crop, diarrhoea and other digestive troubles.

Barred Rocks
Partridge Rocks
Rhode Island Reds

BABY CHICKS FOR SALE
Buff Orpingtons
White Wyandots
White Leghorns

Buttermilk Baby Chick Food Founts & Feeders For Baby Chicks Koo Koo Laying Mash "Carbola" Disinfecting Paint Straw and Hay	Tonics Remedies Lice Powder Egg Crates Leg Bands
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WEEKS HARDWARE CO.
119 - 121 FIRST WASHINGTON AVE.

The words hardware store above the door no longer adequately describe the place of business toward which they formerly drew attention.

The Weeks Hardware Company has advanced so far that it finds not only a good profit in selling incubators, but also in the actual hatching and selling of the baby chicks themselves and their feed.

This is indeed a departure from

patrons a wide variety of articles which if found on display in a hardware store a few years ago would have led the citizenry to believe the proprietor somewhat missing. Happily those days are now past, and this is all due to the breaking away from the tradition and striking out for business on the basis of providence helps him who helps himself.

The accompanying advertisement

Headquarters

For

High Grade

WALL PAPER

Cut Out BORDER, Yd. **5c**

Elsewhere You Pay
12c, 15c, 18c, 20c and 25c
Per Yard.

Come and Be Convinced.
The Store That Brought
Down the High Cost of
Wall Paper.

The BOSTON HARDWARE & WALL PAPER STORE

31 West Broad St.,

West Hazleton.

Bell 561-R. Cons. 2212

It displays a spirit of in business to win, and who will say them nay?

* * *
The only safe and sure way to destroy an enemy is to make him your friend.

Slight Slackening in Industry to Correct Overproduction, With No Shrinkage in Actual Consumption.

General Business Better Than Normal—Corporation Reports and Forecasts Are Reassuring—Non-Ferrous Metal Buying Dull.

THE midweek trade reviews told in statistics what already is common knowledge; namely, that there has been some slackening in industry and trade. But it should be emphasized that the slackening is largely a matter of correcting over-production and that there has been thus far no disturbing shrinkage in actual consumption of commodities.

In other words, general business is better than normal, although more quiet than recently and a year ago, when a small "boom" was in progress.

Some improvement in the agricultural implement industry is shown in the annual report of the International Harvester Company, which last year earned its full cash dividends for the first time since 1920, while at the same time profits were nearly double those of 1922.

Net profit for 1923, after charges and taxes, was \$10,274,376, equivalent after preferred dividends to \$6.06 a share on the \$99,876,772 common stock. After paying dividends of \$5 on common stock there was a surplus of \$1,064,068, but this was more than absorbed by a 2 per cent stock dividend, which amounted to \$1,958,368. The result was a reduction of \$893,500 in total surplus, which now stands at \$51,308,173.

Net profit in 1922 was \$5,540,768, equivalent to \$1.35 a share on the common stock.

Copper.

Among recent copper sales was a lot of 3,000,000 pounds taken May 1 by American Steel & Wire Company at 13.25 cents, delivered, and a lot of 10,000,000 pounds bought May 3 by General Electric Company at 13.37½ cents, delivered.

These prices about represent the range of prices the past week.

On May 5 practically all agencies were on a 13.37½-cent delivered

basis, with no shading of this price.

Foundries are operating on a hand-to-mouth basis as regards material, but most brass foundries in eastern territory have enough spot business to keep them operating close to capacity.

Chicago base price on sheets is 20½ cents per pound; tubing, 23 cents.

Tin.

Tin prices have ranged between 47.12½ cents and 48.50 cents the past week. Consumers have bought sparingly, but a few large buyers have taken up some metal, both for prompt and future delivery.

Anticipating a short supply in late May and early June, some holders have been putting their tin in warehouse and a premium already is appearing on spot of close to 1 cent a pound.

The May 1 statistics showed a decrease in the world visible supply of 4,252 tons, due to small shipments from the Straits and heavy world deliveries.

The tonnage afloat to the United States May 1 was only 4,546 tons.

Chicago prices on pig tin are \$48.50 per hundred; bar, \$49.50.

Zinc.

Zinc prices broke to 5.80 cents, East St. Louis, on offerings of resale zinc and operations through brokers, though most smelters have not been inclined to take much business at the current market, which represents a loss of ¼ to ½ cent a pound, with ore at the present replacement cost of around \$40 a ton.

The American Smelting & Refining Company, May 5th, reduced its official contract price for lead \$5 a ton, to 7.75 cents a pound, New York, a price which previously had been quoted by sellers in the open market.

After the reduction outside sell-

ers quoted 7.75 cents, New York, and 7.50 cents, East St. Louis.

Lead.

At present the foreign weakness is the most potent factor in tin market, and otherwise actual immediate conditions here would warrant more stability. Speculative liquidation rather than a weak statistical position abroad may account for the lower foreign price.

There is a fair amount of consuming demand for early requirements, and in some instances consumers have thought well enough of lead for delivery a month or two ahead at the concessions being made to place contracts at the fixed prices above referred to.

May delivery New York is available at 7.50 cents, June at 7.37½ cents, July at 7.25 cents.

Solder.

Chicago warehouse prices on solder are as follows: Warranted, 50-50, \$30.50; Commercial, 45-55, \$29.75, and Plumbers', \$28.50, all per 100 pounds.

Wire and Nails.

Buying of wire and wire products at Chicago by railroads and builders of freight cars continues to provide makers with their greatest single item of business. With mills able to make prompt delivery, jobbers continue holding stocks to a minimum. Prices on all classifications are weak, but decisive price cutting has not made its appearance. Wire nails in this district are averaging about 60 per cent operations.

A fairly large number of mixed carload orders are coming through to Pittsburgh from scattered jobbers. The tendency is to hold the market firmly at 2.75 cents and 3.00 cents, base Pittsburgh, on plain wire and wire nails, respectively.

Operations continue 65 to 70 per cent of capacity, although in some

parts of the Mahoning valley they are not so high.

Cement-coated nails are weak at 2.50 cents, base Pittsburgh, some price cuts to 2.40 cents having appeared.

Bolts and Nuts.

One maker of bolts and nuts at Chicago has withdrawn its price and the trade takes this to mean that the end of the present wave of price cutting has been reached.

In the past week new business and specifications have been further curtailed. On large machine bolts the spread is 60 and 10 off to 60, 10 and 10 off.

Large rivets are down to \$2.90 to \$3.10, while small rivets are down to 70, 10 and 5 off.

Tin Plate.

Tin plate makers have opened books for the third quarter or last half.

Users, however, are more concerned about how they are going to meet the mid-season rush among canners, because of the continued backward season for planting, than they are about issuing new inquiries.

Practically nothing is before the tin plate producer in the way of new inquiries and the opening of the books of the American Sheet & Tin Plate Company and independent manufacturers on May 1 elicited little response.

Operations average about 85 per cent. Some operations are slightly better.

The price is unchanged at \$5.50 per base box of 100 pounds, Pittsburgh. Demand for stock plate at \$5 to \$5.25 still is good.

Sheets.

So many different prices are being quoted at Pittsburgh on blue annealed, black and galvanized sheets, it is difficult to determine what the market prices are. Some manufacturers have no definite price policy, leaving the matter open for negotiation.

On blue annealed and galvanized there is less inclination to shade the market, although prices of 2.75 cents and 4.75 cents, respectively, still are current.

It is understood the independent group of manufacturers wish to stop selling at a loss and meet upon some middle ground tentatively placed at \$3 per ton under the Steel Corporation's sheet subsidiary levels.

Certain factors in the Chicago market ahead of steel sheet manufacturers are becoming known to buyers, who have permitted stocks to run down to the danger point in some instances.

Hot weather is only a few weeks distant, while a strike by amalgamated workers threatens on July 1. The result is that consumers are starting to build up their stocks and activity in the next thirty to sixty days will probably exceed that of any period so far this year.

One local maker states that it is through meeting competition and the bottom of the price spread in the district is invariably the quotation of outside makers.

Old Metals.

Wholesale quotations in the Chicago district, which should be considered as nominal, are as follows: Old steel axles, \$17.50 to \$18.00; old iron axles, \$25.00 to \$25.50; steel springs, \$18.00 to \$18.50; No. 1 wrought iron, \$11.50 to \$12.00; No. 1 cast, \$16.50 to \$17.00, all per net tons. Prices for non-ferrous metals are quoted as follows, per pounds: Light copper, 8½ cents; light brass, 5 cents; lead, 5 cents; zinc, 3¼ cents, and cast aluminum, 15 cents.

April Pig Iron Output Exceeds Any Previous Month Since August.

Chicago Melters' Stocks Low, With \$23 as Present Price—Sales at Birmingham Are in Small Lots at \$22.

THE first decrease of the year was registered in iron production last month, while the last week has brought a more marked reduction in steel output.

The *Iron Age* places April pig iron production at 107,781 tons a day, compared with 111,809 tons in March. On May 1, however, the daily capacity of active furnaces was 96,365 tons, compared with 112,240 tons on April 1.

But the April pig iron output exceeded any previous month since last August, and present capacity is as large as in January.

It is estimated the Steel Corporation is operating at 73 per cent of capacity, compared with 95 per cent a few weeks ago, while the independent mills now are around 65 to 70 per cent, compared with 90 per cent earlier in the year.

Here, again, it is stated that "consumption is plainly of much greater volume than are new orders," and that orders therefore eventually must increase.

Northern and malleable foundry iron have dropped to a flat price of

\$23, furnace, with this level weak and susceptible of shading if tested by a good tonnage. Reports are current of prices as low as \$22 and \$21, but while the price is tending down, it is probable \$23 most nearly represents the present market.

Selling still is negligible, although a trifle better than several weeks ago. Sentiment is somewhat improved, and seasonable weather brings hopes of a revival in the automobile industry. One large seller of foundry coke reports May shipments so far are heavier than in the latter part of April. Melters' stocks of iron are so low any kind of an upturn is certain to greatly stimulate demand.

Southern iron is quoted \$22, Birmingham. Southern iron by barge is available at \$24.86, delivered Chicago. A consumer is inquiring for 100 tons of silveries.

Pig iron sales in the Birmingham district are in small lots, and while quotations range from \$22 to \$23, it is reported that \$21.50 has been accepted on an order from a pipe-maker.

Chicago Warehouse Prices on Hardware and Metals.

AMERICAN ARTISAN AND HARDWARE RECORD is the only publication containing Western Hardware and Metal prices corrected weekly.

METALS		HARDWARE, SHEET METAL SUPPLIES, WARM AIR FURNACE FITTINGS AND ACCESSORIES.		BOLTS.		CLIPS.	
PIG IRON.							
Chicago Foundry..		23 00		Carriage.		Damper.	
Southern Fdy. No.		27 51 to 28 51		Small, roll thread.....50-10%		Acme, with tail pieces,	
2		14 05		Small and Large cut		per doz. \$1 25	
Lake Sup. Charcoal		17 57		thread50%		Non Rivet tail pieces,	
Malleable		18 04		per doz. 25			
Malleable		23 00					
FIRST QUALITY BRIGHT TIN PLATES.							
IC 14x20 112 sheets		\$12 45		Machine.		COPPERS—Soldering.	
IX 14x20.....		14 05		Small, roll thread.....60%		Pointed Roofing.	
IXX 14x20 56 sheets		17 57		Small, cut thread ...50 & 10%		3 lb. and heavier...per lb. 40c	
IXXX 14x20.....		18 12		Machine.		2 lb. " 48c	
IXXXX 14x20.....		18 65		Stove70-10%		1 1/2 lb. " 55c	
IC 20x28 112 sheets		27 50		Braces, Ratchet.		1 lb. " 60c	
IX 20x28.....		29 85		V. & B. No. 444, 8 in.....\$4 54			
IXX 20x28 56 sheets		16 15		V. & B. No. 222, 8 in..... 3 89			
IXXX 20x28.....		17 20		V. & B. No. 111, 8 in..... 3 55			
IXXXX 20x28.....		18 25		V. & B. No. 11, 8 in..... 3 02			
TERNE PLATES				BRUSHES.		CORD.	
Per Box				Hot Air Pipe Cleaning.		No. 7 Std. per doz. banks. \$10 75	
IC 20x28, 40-lb. 112 sheets		\$25 60		Bristle, with handle, each \$0 85		No. 8 " " " 12 30	
IX 20x28, 40-lb. "		28 50		Flue Cleaning.			
IC 20x28, 30-lb. "		21 80		Steel Only, each.....\$1 25			
IX 20x28, 30-lb. "		24 70		BURRS.			
IC 20x28, 25-lb. "		20 80		Copper Burrs only.....40%			
IX 20x28, 25-lb. "		23 70		BUTTS.			
IC 20x28, 20-lb. "		18 30		Steel, antique copper or dull			
IV 20x28, 20-lb. "		21 15		brass finish—case lots			
IC 20x28, 15-lb. "		17 05		3 1/2x3 1/2—per dozen pairs \$3 12			
IC 20x28, 12-lb. "		15 75		4x4..... 4 40			
IC 20x28, 8-lb. "		14 05		DAMPERS.			
COKE PLATES.				"Yankee" Hot Air.			
Cokes, 80 lbs., base, 20x28. \$13 85				7 inch, each 20c, doz....\$1 75			
Cokes, 90 lbs., base, 20x28. 14 10				8 " " " 2 40			
Cokes, 100 lbs., base, 20x28. 14 45				9 " " " 2 75			
Cokes, 107 lbs., base, IC 20x28.....		14 85		10 " " " 3 00			
Cokes, 135 lbs., base, IX 20x28.....		17 40		CEMENT, FURNACE.			
Cokes, 155 lbs., base, 56 sheets.....		9 75		American Seal, 5 lb. cans, net \$ 45			
Cokes, 175 lbs., base, 56 sheets.....		10 65		" 50-lb. cans, " 90			
Cokes, 195 lbs., base, 56 sheets.....		11 70		" 25-lb. cans, " 2 00			
BLUE ANNEALED SHEETS.				Asbestos, 5 lb. cans, net.... 45			
Baseper 100 lbs. \$3 50				Pecoraper 100 lbs. 7 51			
ONE PASS COLD ROLLED BLACK.				CHAINS.			
No. 18-20.....per 100 lbs. \$4 50				% in. proof coil chain, per			
No. 22-24.....per 100 lbs. 4 55				100 lbs. \$3 50			
No. 26.....per 100 lbs. 4 60				American coil chain....40 & 10%			
No. 27.....per 100 lbs. 4 65				CHIMNEY TOPS.			
No. 28.....per 100 lbs. 4 70				Iwan's Complete Rev. &			
No. 29.....per 100 lbs. 4 75				Vent.....30%			
GALVANIZED.				Iwan's Iron Mountain only....35%			
No. 16.....per 100 lbs. \$4 85				Standard30 to 40%			
No. 18-20.....per 100 lbs. 5 00				CHISELS.			
No. 22-24.....per 100 lbs. 5 15				Cold.			
No. 26.....per 100 lbs. 5 30				V. & B. No. 25, 1/4 in., ea. \$0 26			
No. 27.....per 100 lbs. 5 45				V. & B. No. 25, 5/8 in., ea. 41			
No. 28.....per 100 lbs. 5 60				Diamond Point.			
No. 30.....per 100 lbs. 6 10				V. & B. No. 55, 1/4 in.... 0 31			
BAR SOLDER.				V. & B. No. 55, 5/8 in.... 0 48			
Warranted.				Firmer Bevelled.			
50-50per 100 lbs. 30 50				Round Nose.			
Commercial.				V. & B. No. 65, 1/4 in.... 0 20			
45-55per 100 lbs. 29 75				V. & B. No. 65, 5/8 in.... 0 40			
Plumbersper 100 lbs. 28 50				SOCKET FIRMER.			
ZINC.				Cape.			
In Slabs		6 25		V. & B. No. 50, 1/4 in.... 0 31			
SHEET ZINC.				V. & B. No. 50, 5/8 in.... 0 57			
Cask lots, stock, 100 lbs.. 11 75				CHUCKS, DRILL.			
Less than cask lots, 100 lbs. 12 00				Goodell's, for Goodell's Screw DriversList less 35-40%			
BRASS.				Yankee for Yankee Screw Drivers\$6 00			
Sheets, Chicago base..... 19 1/4c				BLOCKS.			
Mill Base 17 1/4c				Wooden45%			
Tubing, brazed, base..... 24 1/4c				Patent45%			
Wire, base 17 1/4c				BOARDS.			
COPPER.				Stove.			
Sheets, Chicago base..... 20 1/4c				Per Doz.			
Mill base 19 1/4c				Crystal, 33"\$23 90			
Tubing, seamless, base..... 23c				Wash.			
Wire, No. 9 & 10 B. & S. Ga. 16 1/4c				No. 760, Banner Globe (single)per doz. \$5 25			
Wire, No. 11, B. & S. Ga. 16 1/4c				No. 652, Banner Globe (single)per doz. 6 75			
LEAD.				No. 801, Brass King,per doz. 8 25			
American Pig 7 75				No. 860, Single—Plain Pump6 25			
Bar 8 50				BOARDS.			
Sheet.				Front Rank, each.....\$1 75			
Full Coilsper 100 lbs. 11 50				Per doz. 18 00			
Cut Coilsper 100 lbs. 11 75				BLOCKS.			



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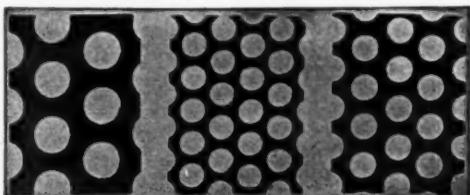
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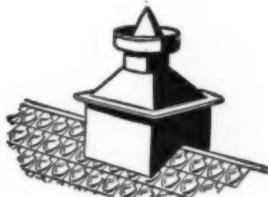
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Uniform, Collar Adjustable.	
5-inch	Doz. \$2 00
6-inch	" 2 10
7-inch	" 2 60

WOOD FACES—50% off list.

FENCE.

Field Fence	60 1/2 %
Lawn	" 53 %

FILES AND RASPS.

Heller's (American)	50-10%
American	60-10%
Arcade	50%
Black Diamond	40-10-5%
Eagle	50%
Great Western	50%
Kearney & Foot	50%
McClellan	50%
Nicholson	50%
Simonds	60%

FIRE POTS.

Ashton Mfg. Co.	Complete line
	Firepots and Torches... 52%

Otto Bernz Co.

No. 1 Furn. Gasoline with large shield, 1 gal.	\$ 6 75
No. B Furn. Kerosene, 1 gal.	15 12
No. 10 Brazier, Kerosene or Gasoline, 10 galas...	47 52
No. 5 Torch, Gasolene or Kerosene, 1 pt....	7 92
No. 83 Torch, Gasoline, 1 quart	5 40
No. 86 Torch, Gasoline, 1 pint	4 05

Clayton & Lambert's.

East of west boundary line of Province of Manitoba, Canada, No. Dakota, So. Dakota, Nebraska, Kansas, Oklahoma, Amarillo, San Angelo and Laredo, Texas	52%
West of above boundary line	48%

Geo. W. Diener Mfg. Co.	Ea.
No. 02 Gasoline Torch, 1 qt.	\$ 5 55
No. 0250, Kerosene or Gasoline Torch, 1 qt.	7 50
No. 10 Tinner's Furn.	
Square tank, 1 gal.	12 60
No. 15 Tinner's Furn.	
Round tank, 1 gal.	12 00
No. 21 Gas Soldering Furnace	3 60
No. 110 Automatic Gas Soldering Furnace	10 50

Double Blast Mfg. Co.

Gasoline, Nos 25 and 35...	60%
Quick Meal Stove Co.	

Vesuvius, F.O.B. St. Louis	30%
(Extra Disc. for large quantities)	

Chas. A. Hones, Inc.

Buzzer No. 1	\$ 9 00
" 2	12 00
" 22	13 50
" 42	15 00
" 43	19 00

FREEZERS—ICE CREAM.

Peerless and Alaska	
1 quart	\$2 95
2 quart	3 45
3 quart	4 10

White Mountain

1 quart	\$4 85
2 quart	5 65

GALVANIZED WARE.

Pails (Competition), 8 qt...	\$1.85
10-qt.	2 10
12-qt.	2 30
14-qt.	2 57
Wash tubs, No. 1	\$6 00
No. 2	6 75
No. 3	8 00

GARAGE DOOR HARDWARE.

Stanley	All net
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GAUGES.

Marking, Mortise, etc.	Nets
------------------------	------

Wire.

Disston's	25%
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GIMLETS.

Discount	65% and 10%
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GLASS.

Single Strength, A and B.	
all sizes	82 & 85%
Double Strength, A, all sizes	84%

GREASE AXLE.

Frazers'	
1-lb. tins, 36 to case, per case	\$ 4 70
3-lb. tins, 24 to case, per case	7 80
5-lb. tins, 12 to case, per case	7 20
10-lb. tins, per dozen	10 40
15-lb. tins, per dozen	13 80
25-lb. tins, per dozen	19 80

Hammers, Handled

All V. and B.	Each, net
Blacksmiths' Hand, No. 0, 26-oz.	\$1.00
Engineers' No. 1, 26 oz.	92
Farrier's, No. 7, 7-oz.	78
Machinists', No. 1, 7-oz.	78

WOOD FACES—50% off list.

Bar Meat.

V. and B. No. 26,	%"
each	1 74
V. and B. No. 28,	1/2 "
each	1 37

Screw Meat.

V. and B. No. 2,	per gro.
6 50	

Butchers' "S."

V. and B. No. 6	each..
08	

V. and B. No. 8, each..

V. and B. No. 8,	each..
11	

" 28-30 in., each.... 1 00



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GALVANIZED STEEL
BLACK STEEL
BLACK and GALVANIZED ARMCO IRON
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TERNE PLATE
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ZINC LEAD
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Hand-dipped galvanized shingles are dipped separately in a bath of molten zinc—sides and edges receive the same uniform coating of zinc.

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Copper Bearing
Steel



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Therefore
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PAILS.	POKERS, STOVE.	SAWS.	Rivet.
Cream. 14-qt., with gauge.....per doz. \$9 50 18-qt. without gauge.....per doz. 11 00 20-qt., without gauge.....per doz. 11 75	Wr't Steel, str't or bent.....per doz. \$0 75 Nickel Plated, coil handles....." 1 10	Butchers'. Atkins No. 2, 14-in.....\$12 75 " No. 2, 18-in.....14 30 " No. 7, 16-in.....15 85 " No. 2, 22-in.....15 92 " No. 7, 20-in.....18 05 " No. 7, 24-in.....20 20 " No. 7, 28-in.....22 35	Farmers'.....\$0 15 Tinners' 3-4.....0 40 " 00-0.....0 60
Sap. 10-qt., IC Tin.....per doz. \$4 00 12-qt. " " " 5 50	Each\$0 50	Compass.	Saw. Atkins No. 10.....per doz. \$3 80 " No. 12.....6 20
Stock. Galv. qts. 14 16 18 20 Per doz. \$9 75 10 75 12 75 14 50	PULLEYS.	CROSS-CUT.	SHEARS.
Water. Galvanized qts. 10 12 14 Per doz.\$5 75 6 50 7 25	Furnace Tackle.....per doz. \$0 60 per gross 6 00 " Screw (enclosed).....per doz. \$0 85	Atkins No. 221, 4-ft.....\$3 03 " No. 221, 6-ft.....4 45 " No. 221, 8-ft.....6 07	Nickel Plated, Straight, Per Doz. " " " 7" \$12 90 " " " 8" 14 45 Japanned, Straight.....6" 11 00 " " " 7" 12 40 " " " 8" 13 80
PASTE.	VENTILATING REGISTER.	Hand.	SHEARS, TINNERS' & MACHINISTS'.
Asbestos Dry Paste: 200-lb. barrel.....\$15 00 100-lb. barrel.....8 00 35-lb. pail 3 25 10-lb. bag 1 00 5-lb. bag 55 2 1/2-lb. cartons 30	Per gross\$9 00 Small, per pair 0 30 Large, per pair 0 50	Copper Burrs only.....40% " No. 96, 20 in.....21 70	Viking\$22 00
PINCERS.	PUNCHES.	Hand and Rip.	Lennox Throatless.
All V. and B. Carpenters', cast steel, No. 6 8 10 12 Each \$0 43 \$0 52 \$0 61 \$0 71 Blacksmiths', No. 10.....\$0 64	Machine. Each V. & B. No. 11-13, 1 1/2x6.....\$0 19 V. & B. No. 90, %x9..... 27 V. & B. No. 10, %x10.... 29 V. & B. No. 1-6, 1/2x6..... 12	Atkins No. 54, 20-in.....\$19 50 " No. 54, 26-in.....24 40 " No. 58, 16-in.....18 10 " No. 58, 20-in.....22 90 " No. 58, 24-in.....26 60 " No. 58, 28-in.....31 45 " No. 58, 30-in.....34 15	No. 1835% Shear blades10% (f. o. b. Marshalltown, Iowa.)
PIPE.	Center.	Keyhole.	Peerless Steel Squaring.
Conductor. "Interlock" Galvanized. Crated and nested (all gauges)60-20% Crated and not nested (all gauges)60-15% Square Corrugated A and B and Octagon. 29 gauge60-10% 28 "60-10% 26 "60-10% 24 "60-10%	Belt. V. & B. No. 101-103.....\$0 24 V. & B. No. 25, asst..... 3 80 V. & B. No. 25, asst..... 3 80	Atkins No. 1 complete.....\$3 10 " No. 2 complete.....3 70	Foot Power. No. 1-30", 18 ga. cap....15% No. 2-36", 18 ga. cap....15% No. 4-52", 18 ga. cap....15% No. 10-120", 22 ga. cap....15% No. 4A-52", 16 ga. cap....15%
"Interlock." Crated and nested (all gauges)60-20% Prices for Galvanized Toncan Metal, Genuine O. H. Iron, Lyonmore Metal and Keystone C. B. on application.	Samson Line. No. 1 Hand Doz. lots or less40% No. 2 Hand 3 doz. lots ...Less 40 & 5% No. 4 Hand 6 doz. lots or more—Less 50%	Miter Box. Atkins No. 1, 4x20.....\$32 65 " No. 1, 5x22.....38 00 " No. 1, 6x22.....42 20	Cast Iron Foot Power. No. 01, 30", 18 ga. cap....15%
Stove. Per 100 joints 26 gauge, 6 inch E. C. nested 17 00 26 gauge, 7 inch E. C. nested 19 00 28 gauge, 5 inch E. C. nested 14 00 28 gauge, 6 inch E. C. nested 15 00 28 gauge, 7 inch E. C. nested 17 00 30 gauge, 5 inch E. C. nested 12 00 30 gauge, 6 inch E. C. nested 13 00 30 gauge, 7 inch E. C. nested 15 00	Extra Punches and Dies for Samson: No. 1 Hand Less than doz. lots...Less 25% No. 2 Hand Doz. lots,Less 33 1/3% No. 4 Hand 3 doz. lots,Less 40% No. 3 Bench 6 doz. lots or more...Less 40 & 10%	Pruning. Atkins No. 20, 12-in.....\$ 8 45 " No. 10, 16-in.....18 15	Power Driven. (No. 100 Series, 2 Shaft Drive) (No. 142-42", 18 ga. cap....15% (No. 200 Series, 2 Shaft Underneath Drive) (No. 242-42", 14 ga. cap....15% (No. 300 Series, 3 Shaft Underneath Drive) (No. 342-42", 10 ga. cap....15% No. 372-72", 10 ga. cap....15% (No. 500 Series, 3 Shaft Underneath Drive) No. 596-96", 10 ga. cap....15% No. 600 Series, 3 Shaft Underneath Drive) No. 6120-120", 3/16" cap....15%
T-Joint Made up 6-inch, 28 ga.per 100 \$2 50	PUTTY.	Wood. Atkins No. 202.....\$ 7 19 " No. 318.....8 75 " No. 906.....15 50 " No. 1509.....16 56	SCRAPERS.
Furnace Pipe. Double Wall Pipe and Fittings40-10% Single Wall Pipe, Round Pipe Fittings40-10% Galvanized and Black Iron Pipe, Shoes, etc. 40-10% Milcor Galvanized40% Lead. Per 100 lbs.....\$10 25	QUADRANTS.	Box. No. 6, six blade each.....25c	Hog. No. 6, each25c
PLANES.	FLOOR REGISTERS AND BORDERS.	Floor (Stearns). No. 10, each\$11 50	Floor (Stearns). No. 10, each\$11 50
Stanley Iron BenchNet	PUTTY.	SCREEN DOOR HINGES	SHOES.
PLIERS.	Commercial Putty, 100-lb. kits\$3 55	Cast Irongross \$13 00 Steel" 9 50	Mileor. Galv. Std. Gauge, Plain or corg. round flat crimp....65% 26 gauge round flat crimp....40% 24 gauge round flat crimp....10% Conductor65%
(V. & B.) Nut, No. 3, each.....\$2 60 " No. 5, each..... 64 " No. 20, each..... 69 Gas, No. 7, each..... 55 " No. 9, each..... 61 " No. 12, each..... 87	QUADRANTS.	SCREWS.	SHOVELS AND SPADES.
Lining or Crimping. No. 35, each 64	FLOOR REGISTERS AND BORDERS.	Wood. F. H. Bright80% R. H. Blued78% F. H. Jap'd74% F. H. Brass76% R. H. Brass74%	Coal. Hubbard's. No. A B C D 1 \$16 00 15 10 14 45 13 70 2 16 35 15 60 14 85 14 10 3 16 75 16 00 16 25 14 40 4 17 10 16 35 16 60 14 85
Button's Pattern. No. 6 each..... 61 No. 8 each 74	ROOFING.	Sheet Metal. No. 7, 1/4x1/4, per gross.....\$0 55 No. 10, 3/4x3/16, per gross 75 No. 14, 1 1/2x1/4, per gross... 90	Post Drains & Ditching. Hubbard's. Size A B C 14"\$17 15 \$16 40 \$15 65 16" 17 50 16 75 16 00 18" 17 85 17 10 16 85 20" 18 20 17 45 16 70 22" 18 55 17 80 17 05
Double Duty, No. 106..... 50	ROPE.	SCREW DRIVERS.	Alaska Steel. D-Handleper doz. \$3 50 Long Handle" 3 00
POINTS, GLAZIERS'.	Cotton. Sisal. 1st Quality, base...14 1/2 to 16 1/2c No. 213 1/2 to 15 1/2c	Uncle Sam Standard Head. 2 inches, each\$ 45 5 inches, each 52 8 inches, each 68 12 inches, each 1 02	SIFTERS.
No. 1, 2 and 3..per doz. pkgs. 65c	Manila. 1st Quality standard brands17 1/2 to 19 1/2c No. 216 1/2 to 18 1/2c	Uncle Sam Insulated Head. 3 inches, each\$ 49 5 inches, each 57 8 inches, each 76 12 inches, each 1 14	Genuine Hunters, doz.\$2 50
	Nail. V. & B. No. 100, in cardboard boxesdoz. \$1 55 No. 100, in wooden boxes, Doz. 1 58 No. 30, assorted....doz. 39 No. 5, in cardboard boxes,doz. 1 25 No. 5, in wooden boxes,doz. 1 30	SETS.	SKATES.
	Hardware Grade, per lb.14 1/2c		Ice, Men's and Boys'. Per Pair Key Clamp—rocker—bright finish\$ 76 Key Clamp—rocker—nickel finish 1 10 Key Clamp—rocker — pol—steel 1 36 Key Clamp—rocker — pol—Skate outfit 4 75
			Women's and Girls'. 1/2" Key Clamp—rocker....\$1 31 " " " hockey....1 38 Ice Skate outfit..... 5 00
			Koller. Ball Bearing—Boys'\$1 45 Copper Burrs only....30% Ball Bearing—Girls' 1 65